Price: £1.95

ST APPLICATIONS

The Magazine for Users of Atari ST, STE and TT Computers — *Issue No. 20 August 1992*

THIS MONTH

REVIEWS

- DTP Books
- Gnu C++
- TCOS
- RDE
- The Chameleon

ARTICLES

- MIDI Music Show
- Inside the TT
- Working with Didot
- Soft Acceleration

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- News
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- Jeremiah's Journal
- CAD Column
- STicks and STones
- Desktop Discussions
- Programmers' Forum
- The A-Z of the ST
- Forum
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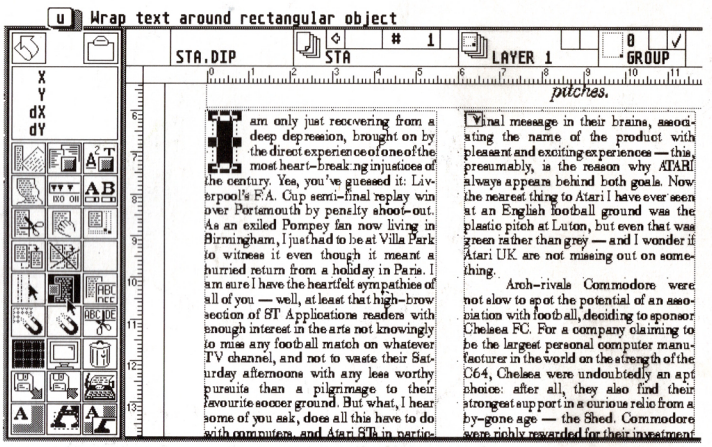
Printed in the U.K.

DTP Books

Michael Baxter reviews three books that readers involved with DTP may well find useful, if not essential to their work: A Guide to Type 1 PostScript fonts, Collier's Rules for Desktop Design and Typography, and Desktop Publishing by Design.

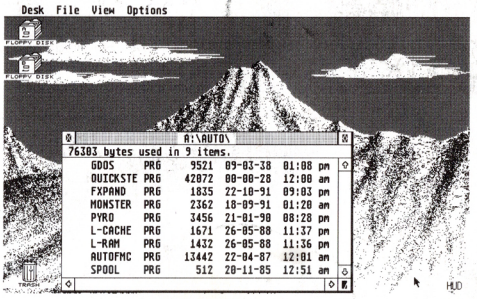
Working with DIDOT PROFESSIONAL

Günter Minnerup offers a "hands-on experience" of Didot Professional, taking readers step-by-step through the process of creating a page of text and graphics, using last month's STicks and STones column.



SOFTWARE ACCELERATION

Software to speed the ST: Douglas Drummond considers some of the software designed to help the ST's operating system work rather more quickly, speeding up those screen redraws that take an age on the normal machine, and banishing the busy bee for ever...



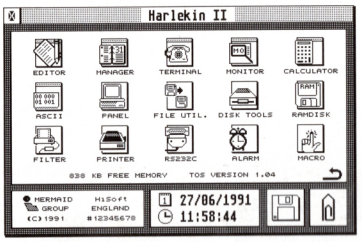
Inside the TT

As a follow-on to his popular series on the innards of the ST, Paul Rossiter outlines what lies at the heart of its big brother, the TT.

HARLEKIN 2

- your dreams can come true

Harlekin 2 is a unique collection of utilities and applications for your Atari ST and TT computers. All programs are available from a single desk accessory, providing maximum convenience while taking up only one slot on the Desk menu:



- *complete editor with search and replace, block-marking with the mouse, external clipboard with cut copy and paste, full page setup options for printing, word wrap and more.*
- *extremely powerful appointment diary/calendar/ideas organiser called the Manager. This allows you to make notes of any size and assign dates, times, priorities, icons and alarms to them. Then print out your notes by day, month, year etc. for a complete time management system.*
- *dynamic printer spooler that takes just as much memory as it needs, comprehensive printer filter.*
- *full macro processor allowing keyboard shortcuts for Harlekin's modules and extensive keyboard macros, all totally under your control.*
- *communications package allowing X-Modem and Y-Modem protocols plus full modem set up and an extensive dial directory.*
- *many, many more utilities too numerous to mention in this small space, plus a 150-page, wire-bound manual.*

Harlekin 2 is available now at a price of £59.95 inclusive. Upgrades from version 1 cost £24.95; just send your master disk back to HiSoft, together with your remittance.

HighSpeed Pascal 1.5

Version 1.5 of this immensely popular compiler is now available. Additional features over 1.1 are:

- *inline assembler*
- *help desk accessory*
- *i/o-mapped maths co-processor support*
- *faster, improved editor; more compact libraries*
- *structured constants - an invaluable addition*
- *absolute-address variables*

Upgrades from earlier versions cost £7.50 inclusive including new documentation.

For those not in the know, HighSpeed Pascal comes from Denmark, is extremely fast and friendly to use and is very closely compatible to the immensely popular Turbo Pascal on the PC, even including the graphics unit from the PC.

Compilation speed is roughly 20,000 lines per minute with excellent code generation for the ST and the TT.

ProFlight 1.2

We are pleased to announce the release of version 1.2 of ProFlight, our immensely popular Tornado flight simulator, loved by reviewers and users alike.

This new version of our Tornado flight simulator includes improved colour graphics, the ability to save your cockpit set-up, a pause key, more control over the view angle and more ... it even works on the TT!

Registered users can upgrade by sending their master disk back, together with £2.50.

HiSoft C

The ideal way to learn the difficult C language is with an interpreter and HiSoft C for the ST has all you need:

- *try out your new C programs quickly and easily*
- *interactive editor with on-line help*
- *debugger with single-step*
- *extensive GEM toolbox*
- *complete manual with C tutorial*

HiSoft C is already widely used and has been well received by its users and reviewers alike.

So take the hassle out of C and learn the language everybody's talking about.

When you're ready, move up to Lattice C 5.

HiSoft BASIC 2

HiSoft BASIC 2 is here at last:-

- *New, multi-window editor with lots of features*
- *Extremely fast development thanks to pre-tokenising*
- *Many more language features inc. static arrays*
- *Full support for the STE, MegaSTE and TT*
- *Completely new high level GEM toolbox*
- *Linking with Lattice C & DevpacST assembler files*
- *Resource construction set and debugger included*
- *2-volume documentation of over 700 pages*

Diamond Back II

Diamond Back is the hard disk backup utility that you have all been waiting for. Packed full of features and with an extensive manual, it is the fastest and friendliest package available:

- *Extremely fast backup of any number of drive partitions and directory paths*
- *Easy-to-use GEM interface with online help*
- *Incremental backups by date/time or using the archive bit (TOS 1.4 upwards)*
- *Lots of information and features - disk statistics, disk usage estimation, backup to different floppy types or to other partitions, automatic drive switching, flexible full or partial restoration*
- *Incredibly fast data compression algorithm*
- *File encryption included*
- *Even backup Spectre partitions*

Priority Order Form

Yes, please rush me ..... copy(ies) of

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- ☐ ***HiSoft C Interpreter @ £59.95***
- ☐ ***Lattice C 5.06.02 @ £149.00***
- ☐ ***ProFlight Tornado Sim @ £39.95***
- ☐ ***HiSoft BASIC 2 @ £79.95***
- ☐ ***HiSoft Devpac 2.25 @ £39.95***
- ☐ ***HighSpeed Pascal 1.5 @ £99.95***
- ☐ ***Diamond Back @ £39.95***

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All prices include UK VAT and postage within the United Kingdom. Goods will normally be despatched within 2 working days of receiving your order. Call, write or fax for export prices. All offers subject to availability.

Please post this coupon to HiSoft at:

The Old School, Greenfield, Bedford MK45 5DE UK.
Tel: +44 525 718181, Fax: +44 515 713716

Free mouse mat with every order!

Special Offer

Please phone or write for upgrade details for HiSoft BASIC 2 and Harlekin 2.

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Read_Me 1st

Subscription Expired? If you received this copy of ST Applications through the post, check the first line of your address label carefully: if it reads **STA20**, then your subscription has expired with this issue; if the information line reads "Complimentary Copy" you have been sent a free evaluation copy of ST Applications. Either way, you must take out a new subscription in order to receive further issues.

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New Address:

Mail sent to our old Stoney Street address will be forwarded and our telephone number is unchanged.

Owing to lease restrictions, we are no longer able to make retail sales from our offices. Callers by appointment only, please.

Advertising

There is a limited amount of space for commercial advertising in each issue of ST Applications. Contact Nicky Wilson on 0602-410241 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

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12 issues plus six Disk Mags : £26.50

Subscription and Order form will be found on page 57.

Overseas Distribution

Distribution overseas is dealt with via our agents:

Worldwide Magazines

Contact us for details of your nearest ST Applications stockist.

Disk Mags

These are bi-monthly compilations of the best PD software to come to our attention in the preceding couple of months - not magazines on disk. The next Disk Mag, DMG30, will be dispatched a few days after this issue is sent out.

CREDITS

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Contributions

The articles in ST Applications are written by users for users. Everyone reading this magazine will have something to contribute; even if you do not feel able to do a full-length review or article there is the Forum section for short hints, tips and questions. If you are interested in writing for ST Applications - regularly or irregularly - please write for a copy of our terms and conditions. We always do our best to reward quality work with appropriate remuneration.

Atari News

Atari Nintendo Battle Decided

Atari have lost a major legal battle with Nintendo which has been going on for over two years. Atari had claimed that Nintendo was illegally monopolising the video game market in the US. The trial lasted for eleven weeks and Atari were claiming $160 million by way of lost sales as a result of alleged illegal monopolistic practices. Atari's case was based on the fact that until 1990, Nintendo only allowed developers to create software for their consoles if they signed an agreement not to produce a version of the same game for any other machine within the following two years. Atari were claiming that this restriction prevented developers from producing software for their machines.

The court decided that Nintendo did have monopolistic power but had not harmed Atari's sales and no damages were awarded. The jury failed to reach a decision on two further charges that Nintendo's licensing terms were an unreasonable restraint of trade and that these constituted abuse of their monopolistic postion. Atari are considering pressing for a retrial on the outstanding charges and may even appeal against the original decision. The result was being welcomed by Nintendo as this was the first of a number of pending cases involving alleged anti-competitive practices.

STE Support From Atari

Atari have decided to start producing STE only games which take advantage of the extra features of the machine such as the blitter chip, hardware scrolling and stereo DMA sound. They have already aquired the rights to several coin-op conversions which will appear later this year. The games currently under developement will also be fully TT compatible and will take full advantage of the increased clock speeds of the Mega STE and TT. This move has been taken owing to the lack of STE only software by third party developers. As well as the coin-op conversions, a number of original titles are also being planned.

Success For WWF Sponsorship

Atari's recent sponsporship of Sky TV's World Wrestling Federation events has been hailed a great success. The sponsorship deal advertised Atari at every commercial break. The advertising was targetted at 10 to 15 year old games players and Atari claim that sales of the Lynx handheld games console have increased by 40% since the event. Future tie-ins with other WWF events are being considered.

Multi-TOS - The Details

Further details of Multi-TOS (see ST Applications 19) emerged at the ACE '92 Show in Toronto. Atari's Bill Rehbock demonstrated the new operating system to the general public and gave the fullest account yet of its capabilities. Contrary to its name, it will allow GEM-based programs to multi-task as well as TOS and TTP applications. The Mega STE and TT will take full advantage of the 68030 chip's memory protection facilty which prevents a crash on one application taking the whole system down with it.

Multi-TOS will be a combination of hardware and software. The 'bare bones' of the system will be incorporated into TOS in the ROM chips. However, the majority of the system will be disk based. This will allow the user to set up and save preferred parameters. Software provided shows how much CPU time an application is being offered and how much it is actually using. Although Multi-TOS assigns the required memory and share of CPU time, the user can change these to suit. If for example, an application was allocated 15% of processor time but it actually used up only 10%, the remaining 5% could be reclaimed for use by other applications. The reverse is also true if an application was running sluggishly because it required more CPU time.

Multi-TOS will be supplied as standard with all new machines and will be available as an upgrade to existing ST owners. The average user with an ordinary 68000 based ST or STE will not have the benefit of memory protection but Multi-TOS will attempt to identify the problem application and shut it down without affecting other applications. However, the most serious of crashes will still result in system lockup. Multi-TOS is transparent to all software and existing applications will not require to be re-written to take advantage of it.

Multi-TOS is claimed to run almost as fast as existing TOS versions. This is done by reclaiming CPU time which is currently lost waiting for AES event input. The only limit to the amount of applications running concurrently and the amount of windows open will be available memory. Multi-TOS has already been sent out to developers and is expected to be released to the public this Winter in The States. A UK release should follow shortly afterwards.

Atari Encounter Big Losses

Atari Corporation recently posted their 1st quarter trading results for 1992. Sales dropped by $19.3 million compared to the 1st quarter of 1991. This translated into a net loss of $13.4 million compared to a loss of $2 million for the same period last year. A large proportion of Atari's income is derived from Europe and the loss was contributed to by an extra $8.1 million in exchange charges compared to that of the 1st quarter of 1991.

Music Pro News

Feeling Partner is a flexible arranger and real-time harmony response with a 16 track Midi sequencer. It has six predefined instruments which play in harmony with your melody, chords and instruments in real time and you can build up complex songs from your own recorded tracks plus a variety of preset but programmable features. Feeling Partner costs £175.

Lizard is a comprehensive universal keyboard editor. It can edit up to 10 keyboards at once and is Softlink and MROS compatible. Lizard can snapshot your keyboard's configuration, allowing for perfect synchronisation and the keyboard drivers make full use of all your keyboard's features. Lizard costs £175 and the keyboard drivers, of which there are currently 55, cost £35 each.

The *MCA-16* is VCA Midi automation rack which will will work with any sequencer hardware or software. It includes flexible input/output configurations with powerful Midi control acting as a stereo/mono mixing bus using presets. The supplied software allows you to run the MCA-16 from your computer desktop or from a dedicated main program. The MCA-16 costs £999.

The *Quasar-XL* is an automation rack designed for the professional musician. It includes all the features of the MCA-16 and several more, including XLR input/output in an 8 track unit. The Quasar-XL costs £849.

The *MPG-8* is a single rack four track Midi noise gate. It works independently of automation racks and allows you to link your sequencer directly to your desk for effecient fader control. You can link together as many MPG-8 racks as you require. The MPG-8 costs £549.

For further details of the above products contact:

Music Pro Import (UK),

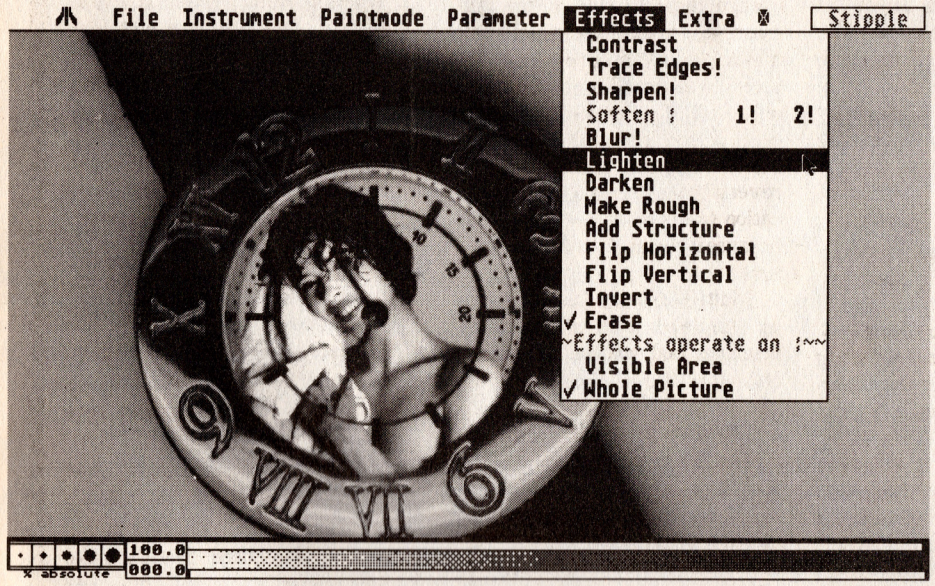
15 Gartmoor Gardens, Southfields, London SW19 6NX;

Tel:(081) 789 8641;

Fax:(081) 780 9541.

The Dawn Of A New Era

2 New programs that will revolutionize your ST(E)/TT



RETOUCHE

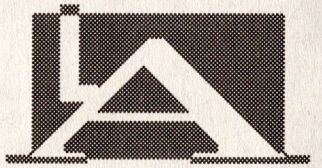
THE DIGITAL REPROSTUDIO

Retouch is a truly revolutionary new graphics tool for the Atari ST(E)/TT. As a Creative user you'll know that a picture can say a thousand words and that powerful tools are essential to achieve the quality you need. We can guarantee that after using Retouche. you'll look back on the days of tortuous pixel-punching with the best of the current bunch of high resolution monochrome art programs as a gruesome nightmare.

Retouche brings new levels of graceful ease and elegant sophistication to the subtle art of fine halftone image retouching, whilst possessing the sheer brute block processing power necessary to execute its comprehensive range of radical full blown image processing techniques. All very smoothly at the highest quality possible and available directly from your desktop.

Price: £175.00

Didot LINEART

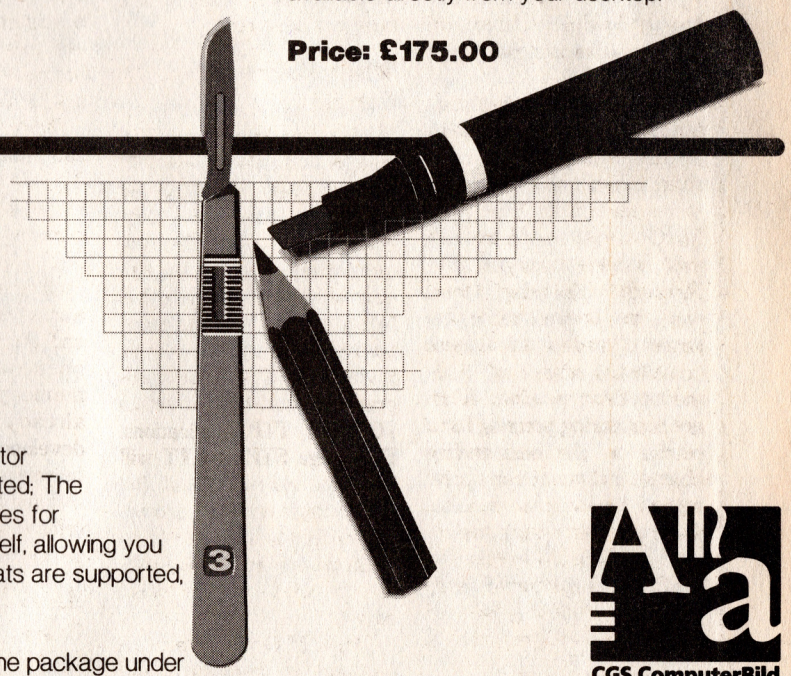


Didot LineArt, is the latest and possibly greatest vector art package of its type to become available for the Atari ST(E)/TT, Didot LineArt displays a fully thought out user interface, and a wealth of features to make vector graphics useable.

Didot LineArt includes three main modules which are; The Font Editor allowing Postscript Type 1 and Calamus fonts to be edited/converted; The Auto-trace Module (level 1), which allows you to trace bitmap images for conversion to vector file formats; and finally The Vector Module itself, allowing you to create simple and complex artwork. Also a number of file formats are supported, including IMG; GEM; CVG; TIFF and many more.

"What better compliment could a reviewer make than to say that the package under review has pushed all competitors off his hard disk? For me, it's definitely good-bye to Easy Draw, Megapaint Professional and Outline Art."
Günter Minnerup. ST Applications

Price: £235.00



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☐	RETOUCHE	175.00 - 10%	+ 3.75 =	161.25
☐	RETOUCHE PROFESSIONAL B/W	530.00 - 10%	+ 5.00 =	482.00
☐	DIDOT LINEART	235.00 - 10%	+ 3.75 =	215.25
☐	DIDOT PROFESSIONAL B/W	355.00 - 10%	+ 5.00 =	324.50

News In Brief

Another Bubblejet

Fujitsu recently entered the Bubblejet market with a budget-priced model called the B100. It gives a draft speed of around 160 cps and has a maximum resolution of 300 dots per inch. The B100 is fitted with a semi-automatic sheet feeder and a 70-sheet feeder is available as an optional extra. The B100 costs £349 and comes with six built in fonts. Thirteen additional font cards are also available.

*Z*Net Merges With Atari Explorer*

Readers of the on-line magazine Z*Net may be interested to know that the publication recently merged with Atari Explorer Magazine, the official publication of Atari Corporation in The States. The result is a new fortnightly on-line magazine called Atari Explorer On-Line. It continues to be available for download from Genie. Many of the Z*Net staff have transferred to the new publication.

Electronic Arts Drops The ST

In a surprise announcement, leading software house Electronic Arts have said that they are to develop no more titles for the Atari ST. They decided to pull the plug on the ST version of John Madden's *American Football* after they considered that the game would not generate enough revenue when compared to versions for other computers. This essentially puts paid to any hopes of an upgrade to the popular *Deluxe Paint* package.

Microprose News

Microprose have just opened a new office in Manchester which will act as a development base for their programming teams. In addition, they intend to move their headquarters from Tetbury to a less rural setting towards the end of this year. As part of their expansion plans, they have recently purchased independent software developer, Vektor Graphix, who have been responsible for a number of releases over the past few years with probably the most notable being *Shuttle* from Virgin. Microprose intend to expand the company, who are currently working on two Microprose titles.

Formfinder Predicted Gold Cup Winners!

Adam Squibb's Shareware *Formfinder* program has recently been upgraded to v2.0. It now uses menus, takes account of the top ten trainers and jockeys for the current course, past favourite form and gives even more accurate predictions. During testing in January 1992 it accurately predicted the winners of the Newbury Gold Cup, Cheltenham Gold Cup and two winners in the Cheltenham Festival. The Shareware version which has a number of features disabled is available from The ST Club. Registration entitles the user to the full version which comes in a smart black wallet along with instructions on the program and advice on how to bet and how much. Features of the full version include loading and saving of races, up to 20 runners per race, entering of race results and updating of resource, trainer and jockey files. The full version of Formfinder v2.0 costs £20.00 and is available direct from the author Adam D Squibb, 11 Beaulieu Place, Peel Common, Gosport, Hampshire, PO13 0QP.

Monulator Upgraded

Moriarty Software's *Monulator* has been upgraded to v1.85. The Monulator is a software alternative to the high resolution monitor. It gives a 640x400 pixel display on a colour TV or monitor. Contrast is better than the PD mono emulators, with two text filters and a green screen option. In addition, the Monulator can display the high res screen as a double height display using the mouse to scroll the screen. The Monulator costs £20 and is available from Moriarty Software, PO Box 262, Crawley, W Sussex, RH11 7FJ.

Third Coast Go Bust!

Third Coast Technologies went into receivership recently. They made a name for themselves as the first UK distributors of low cost ICD hard drives. The products they sold were very competitive but Third Coast had established a bad name in customer relations over the years. No details of outstanding debts were available as we went to press.

Chart Your Family Tree On Your ST

Family Roots is the latest release from Floppyshop. The program was written by Chris Skellern, author of several Budgie titles, and took three years to develop. It is designed around a fully functioning integrated workbench which is ideal for both the serious user and beginner alike. It uses a combination of screen graphics and integrated database to create a high degree of flexibility. The growing tree structure can be zoomed, scrolled, altered, scanned, printed, manipulated etc. The workscreen can be described as a sheet of graph paper 20448 units wide by 6400 units deep and can accommodate almost 270,000 individuals. Memory usage is very conservative with data for 1,000 entries taking up as little as 100k. *Family Roots* costs £24.95 and a demonstration disk is available for £1.00. For further details contact:

Floppyshop, PO Box 273, Aberdeen AB9 8SJ; Tel: (0224) 312756.

Gemulator Set For September Release

Branch Always Software's *Gemulator* (see ST Applications 18) is to be released in September at $399. Advance orders are currently being taken at an introductory price of $199 until 31st August. The Gemulator is an ST emulator for the IBM PC and compatibles. It requires a '386 or '486 with at least 4 megabytes of memory and a VGA monitor. It consists of a plug-in board and software. Any version of TOS may be fitted (in 6 or 2 ROM sets) and the Gemulator runs all three ST resolutions. The blitter chip is emulated in software. Although the TOS ROMs will be required, they are not fitted as standard. Most ST software will run, with Midi applications and some copy protected games being notable exceptions. The Gemulator has two extra ROM sockets which could be used for plugging in MAC ROMs. This should allow Spectre 3.0 to run under emulation. Mac emulation will not be a feature in the first release but may be incorporated at a later date. For further details on the Gemulator contact

Branch Always Software,
14150 N.E. 20th Street,
Suite 302,
Bellevue,
WA 98007, USA;
Tel/Fax: 206 885 5893.

CES '93 Now A Strong Possibility

Following last month's announcement that News International are contemplating a UK version of the Chicago Computer Electronics Show, we can confirm that further discussions have taken place between them and a sizeable group of potential exhibitors. Those attending the special presentation included Dixons, BT, JVC, Sony, Sharp, Sanyo, Atari, Commodore and Acorn. A further meeting is expected to have taken place by the time you read this, with a final decision on whether or not to stage the event being taken shortly afterwards. If it does take place, it will be held in Autumn 1993 and will cater for home computers, games consoles, TV, video, audio, radio and photography as well as everything else which comes under the banner of consumer electronics. The preferred dates are September 16th to 19th with November 11th to 14th also under consideration.

THE HOME COMPUTER

Over the last ten years, the computer has established a permanent place in the home, and the number of home computer users increases dramatically every year.

Many people have yet to tap the full potential of their home computer and are constantly looking for new ideas and applications.

The most popular systems have proven to be the ST, Amiga and PC, and at the International Computer Show, you will be able to see, try and buy a whole range of products and services which will help you to maximise your use and enjoyment of these machines.

Working from home? In the home office feature you will see all the latest technology available for the small home office, including word processing, spreadsheets, desk-top publishing, upgrades, tele-networking and modems.

Looking to help your child's education? Many companies will show all the latest computerised educational courses from early learning to GCSE and beyond.

What about Multi Media? It is now possible to create, reproduce and store sound using your home computer thus enabling you to unleash your own musical creativity and improve your musical performance. Video and visual interfaces are another rapidly developing field where you can edit and change your home videos.

All this and entertainment too! Many exhibitors will be showing all the latest games software and of course the hand held games consoles - the fastest growing home computing niche.

So whatever your area of interest, you'll find the hardware, software, peripherals and consumables you'll need at the International Computer Show and all at great show prices.

Pre-purchase your fast lane tickets to save money and beat the queues. Simply call the ticket hotline number 0726 68020 for your tickets now. Or send the voucher with your cheque or credit card number. Closing date 3rd July 1992.

Ticket prices:
Admission on the door £6,
Under 10's £4
Fast lane tickets (before 3rd July 1992) £5, under 10's £3

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The Third MIDI Music Show

Report by Ofir Gal

Held at the Novotel, Hammersmith this year, the MIDI Music show was the biggest so far with more than 130 stands displaying the latest samplers, synthesizers and music software. The ST still rules as far as the MIDI scene is concerned, although several stands were proudly demonstrating their software on Macs and PCs (Windows 3).

Many new ST programs and some hardware devices were officially launched at the show and I will do my best to mention all of them - MPI were demonstrating Lizard, their new generic synth editor on a brand new Mega STE as well as Feeling Partner, a composition oriented sequencer. MCA-16 is a new VCA mix automation system that claims to overcome the dreaded zipper-noise phenomenon at less than £1000. A similar product named Niche-ACM could be seen at the Argents stand. Both systems can be controlled via a sequencer.

MIDI files are becoming increasingly popular and Hands On, Heavenly Music and Newtronic were playing selections from their ever-growing catalogues. Hands On were also demonstrating a unique device: OnStage allows loading and playback of MIDI files using an ST without a monitor, hence the name. Newtronic, distributers of Geerdes products, were demonstrating StarTrack, a brand new multi-tasking sequencing package running under MIDIShare at £150 for the basic package. The full English version will be available soon.

A new MIDI to CV converter was launched by Kenton Electronics, known for their analog synths MIDI retrofits. Intonation had Cubase drum maps for the Alesis SR16 drum machine for £7 as well as a simple hard-MIDI-thru/out splitter. Disappointing was the absence of Steinberg/Evenlode, as many visitors were keen to see Cubase Audio at work.

Creative Sounds were demonstrating Improviser, an interactive improvising editor which produces, well... creative sounds... The program requires the user to input the basic melody and harmony to generate improvised melody lines based on the original melody.

The United Kingdom MIDI Association were offering MIDI documentation as well as back issues of MIDI Monitor, a bi-monthly magazine dedicated to MIDI. Membership to the UKMA entitles you to a free help line supported by Vic Lennard. The UKMA also launched a new and useful product named ModemMIDI, which allows you to use the serial output of the ST as an extra MIDI out and therefore giving a total of 32 MIDI channels. At a special show price of £25, this in my mind was the bargain of the show.

Sound Technology distributors of C-Lab software and hardware were busy demonstrating Notator Logic for the Mac, while PolyFrame II was not being given the attention it deserves. Version 2 of PolyFrame is to be available shortly, but I understand that one of the improvements is that all modules are now included at no additional cost, which is good news. MonoFrame is a cut-down version offering one module only.

HCS are a company that specializes in memory and expansion modules for most major computers. At the show they were selling memory upgrades for all ST models at bargain prices as well as the excellent ICD 16MHz board for the ST.

Intrinsic Technology had several new MIDI utilities on display such as a desk accessory track sheet as well as some shareware and PD programs. MIDIHelp! offer data retrieval services dedicated but not exclusive to MIDI.

GenEdit 2 was launched at the show by Atlantic Audio distributor of Hybrid Arts. GenEdit is a generic synth editor offering compatibility with SoftLink, Switcher and HybridSwitch and an extensive module library. Also on show was ADAP SP32 sample player, a 32-voice sampler, which in conjunction with Digital Master and an ST/TT can serve as a full post production system. SmpteTrack Gold and EditTrack Gold are now TT compatible.

Free seminars were also held at the show with various topics covered such as sampling, MIDI guitars, jingles making, drum programming, synchronising, digital mixers and more.

The next London MIDI Music Show will be held in November at Wembley and is set to be even bigger with many stands already booked. More shows are to be held at other major cities in the UK; contact Westminster Exhibitions for more details.

MPI	081-789 8641
Argents	071-379 6690
Hands On	0705 452628
Heavenly Music	0255 434217
Newtronic	081 691 1087
Kenton Electronics	081-974 2475
Intonation	071-624 6194
Creative Sounds	0272-244395
UKMA	081-368 2245
Sound Technology	0462 480000
HCS	081-777 0751
Atlantic Audio	071-272 8944 ext 248
Intrinsic Technology	081-761 0178
MIDIHelp!	0733-322 311
Westminster Exhibitions	081-549 3444

DTP Books

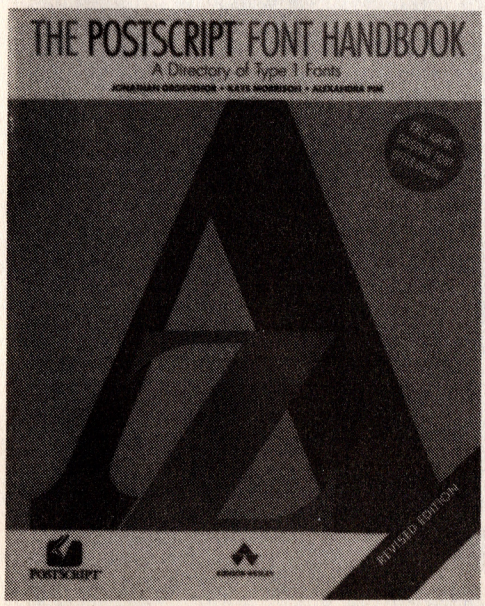
Desk Top Publishing: books on the subject are plentiful - good informative books, however, are harder to find. Michael Baxter takes a look at three books that should be of interest to ST layouters: one is a publication with Apple Pagemaker users in mind but which can also be used as a guide for PageStream 2 and FSP3 users; another is a comprehensive list of PostScript fonts, while the third is a slim but extremely useful guide to the "do's and don't's" of Desktop Publishing...

The PostScript Font Handbook - A Guide to Type 1 Fonts

A year or so ago, this publication would have been of little interest to Atari users. The release of PostScript-compatible DTP software such as Didot Professional, CompoScript and PageStream 2.1 has changed that, with Atari users now having access to the largest range of professional, industry-standard typefaces in the world.

As its name implies, this book is largely a listing of all the PostScript Type 1 fonts available from all four authorised libraries, namely Adobe, Agfa Compugraphic, Linotype/Hell and Monotype. The actual directory section accounts for 380 pages of the 426-page publication, and the authors have managed to cram typeset examples of every single PostScript font family into this space, including all the variations in style and weight available at the time. The result is the most comprehensive typeface guide you are ever likely to see, and as a source of reference to amateur and professional DTP users alike, it is invaluable. Also, anyone involved in font design would probably find this book worth its weight in gold.

The only problem with a publication such as this, with so many quality typefaces listed, is that you end up wanting them all! This presents a small problem, since a single face costs £50 - a typical font family would set you back between £200-£500, clearly out of the range of amateur and home users. In fact, to purchase every font listed in the book, you would have to arrange an overdraft well in excess of £50,000. Fortunately, there are one or two good third party suppliers who can supply almost identical PostScript Type 1 fonts with similar names for a greatly reduced outlay. For example, Gate Seven Computers or PCG can supply a large range of high quality PostScript-compatible typefaces at a fraction of the price of the original articles.



Included with the book is a voucher entitling the purchaser to an original Adobe Garamond font set, comprising of four faces - book, italic, bold and bold italic - supposedly worth £200. The fonts can only be supplied on Apple Mac or IBM format disks, but since later ST/STe's can read MS-DOS disks, this doesn't really represent a problem. Adobe Systems will also give you a free subscription to their "Font & Function" update guide which is published three times a year, and details the new typefaces released since the handbook was printed.

The remaining 56 pages of the book are given over to two sections covering typography and basic page design, and the PostScript language and its usage. The former section is excellent, and despite it only running to just over 22 pages, manages to cram in a great deal of invaluable information for all users of desktop publishing software. Clear explanations of typographical measuring systems and typeface terminology are given, as well as a useful section detailing main typeface variations and how best to use them for maximum impact. Perhaps aware of how prohibitively expensive a large library of genuine typefaces can be, the Font Application suggests manageable selections of versatile body, display, decorative and speciality fonts which would be able to cover the vast majority of publishing tasks without having to re-mortgage the house. The remainder of the section is taken up with an extensive glossary of DTP terminology and a less useful guide to copy mark-up symbols.

The rest of the book is given over to a very readable and informative history of the PostScript system, and for the newcomer, manages to clear up a few of the system's grey areas regarding hints, Type 1 and Type 3 differences, and rendering techniques.

An overview of Adobe's new Multiple Master Type Technology is also given. Multiple Master faces are an enhancement of Type One fonts, containing two or more sets of outlines per typeface - hence the name. By mathematically manipulating and combining these outline sets, a complete and varied range of weights, widths, styles and sizes can be created from a single outline typeface, thereby removing the need to manually install bold, italic, bold italic, etc., typefaces to make up a comparatively limited font family. Multiple masters are a giant leap forward in computerised type technology, but since Apple users are just starting to get to grips with the new system, it may be some time before an ST implementation arrives.

Overall, this books represents an invaluable source of reference to the PostScript system, and any users of the ST based PostScript packages could do a lot worse than investing in a copy. Even if you are simply involved with designing fonts for other systems, you will do well to find a more complete source of example fonts to work from. This coupled with the free font family offer and free subscription to the Adobe Systems font update guide make it a very attractive buy for both amateur and professional users alike. Highly recommended.

Title:.....The PostScript Font Handbook - Revised Edition
Authors:.....Johnathan Grosvenor, Kaye Morrison, Alexandra Pim
Publisher:....Addison-Wesley Publishers Ltd., Finchampstead Road, Wokingham, Berkshire RG11 2NZ
Price:.....£24.95
ISBN:.....0-201-56893-4

Collier's Rules for Desktop Design and Typography

I have always been a little wary of books and tutorials which set out to impose a strict set of rules or guidelines on a creative activity such as graphic design or desktop publishing. By definition, "Collier's Rules for Desktop Design and Typography" would appear to be just such a publication, but despite my initial reservations, this book turns out to be one of the best extensions to any DTP package manual you could ever wish for.

Desktop Design and Typography - DDAT from now on - runs to 135 A5 pages, and is supplied in softback form. It's diminutive presence on the bookshelf belies the sheer volume of information that the writers have managed to cram into the book, and its extremely stylish and innovative presentation is an education in itself.

Eleven very readable chapters work through the entire design and layout process, from elementary text layout through to printing in-house and colour bureaux printing, and then on even further to look at hypermedia and the future of DTP. As with most general desktop publishing oriented material, DDAT contains quite a few references to Apple Macintosh hardware and software. In this case it is not a problem, since most references are purely casual, and in any case, with the likes of Calamus, PageStream 2, Didot Line Art et al gracing the ST scene, there is very little that cannot be applied to ST environments.

To describe each chapter in depth would probably not make very illuminating reading, and so listed below is a brief overview of the topics tackled in each section:

Characters

Beginners start here - this chapter contains the obligatory ground work regarding typesetting jargon, measuring systems, character anatomy and so on, but then goes on to clearly and decisively discuss the differences and respective merits of outline and bitmap fonts, and even goes so far as to discuss advanced concepts such as hints, page description languages, and professional font design. All this is done with such clarity that it makes me mad that books like this were not available when I first started out in DTP!

Typefaces and Fonts

A logical continuation of the previous chapter, this section examines fonts in general and the look of type, suggesting which faces are best suited to which situations. It then proceeds into some deep discussions regarding type classes and their history, and the nuts and bolts of the PostScript language system while somehow managing to remain interesting throughout. Well, I stayed awake anyway.

Words and Lines

This section covers a multitude of sins, outlining a whole host of potential typographical errors and blunders. Apart from its extreme readability, this section doubles as an excellent source of reference covering character spacing, font mixing, character modification, type effects and table creation.

Punctuation

Fortunately, this is not reminiscent of those long, hot summer afternoon English lessons, when we punctuated endless lists of quite forgettable sentences while Mrs Fearsome trudged the dusty boards, present in body but light-years away in spirit, along with everyone else in the room. Instead, this chapter is a very informative and often very humorous list of do's and don't's regarding punctuation symbols, especially in a design sense. Why couldn't my school books have been like this?

Paragraphs

The heading says it all really, but it will be invaluable to anyone who finds themselves sitting in front of a powerful document processor or DTP program which is bursting at the seams with text formatting options and wondering what the hell to do with them all. In keeping with the rest of the book, it highlights common errors with justification, leading, hyphenation and suggests when to use the likes of ranged right, justified or centred text for maximum impact.

Illustrations and Graphics

This chapter successfully manages to convince you that you need to buy a 600dpi laser or imagesetter but probably doesn't go far enough to convince your dependents or your bank manager. Again, the relative merits of bitmap and vector graphics are examined, and which format to use in given situations.

Page Layout

Unlike some other publications, such as Microsoft's Desktop Publishing by Design, DDAT does not

Desktop Publishing By Design - 2nd Edition

Desktop Publishing is an art. It is no easier to put together an attractive-looking document using a DTP program than it is to create a multicolour masterpiece with Deluxe Paint, or an arcade hit with Devpac. We duly blow our hard-earned on the latest "market beating" software, ram it in the disk drive, marvel at the vast array of features and battle for hours to master them. Then what do we do? Probably struggle to do anything really impressive with it, if we were being totally honest. Such is technology - the tools to produce truly professional results can be had by anyone with a few hundred quid to spare, but unfortunately the technical skills to use those tools is not included in the purchase price. The obvious solution is to bite the bullet, accept ignorance and invest in a suitable book which will, one hopes, pick up where the manual leaves off.

One of the best books on this subject I have come across is "Desktop Publishing by Design" by Microsoft Press. It is available in two editions, a Ventura Publisher edition and an Aldus Pagemaker edition. Don't let this put you off however, since there is very little in this book that can't be applied to any current ST DTP software. It's quite a hefty book, weighing in at 424 pages and sporting the same dimensions as your average telephone directory. It's split into three main sections:

1 Elements of Design

This first section will be of the most use to newcomers to DTP with a very informative introduction to the principles of page layout and typography. The "Visual Glossary of Typography" exhaustivley explains the jargon associated with the subject, starting with simple concepts such as typefaces and styles, progressing steadily through to proportional leading and multiple grids. In fact, that is the beauty of this publication - beginners can work through the book as a tutorial at their own pace, yet experienced users will find it invaluable as a source of reference.

The chapter explaining the efficiency, colour and personalities of type is especially good, and highlights the subtle (and often not so subtle) differences between similar typefaces by showing sixteen identical paragraphs set in different fonts. It's often quite difficult to appreciate the deviations between similar fonts when looking through catalogues using "ABCDEfghklm" type examples, but when shown in this context, the difference is quite staggering.

The "Personalities" chapter explains which typefaces are best suited to a particular publication, and which types you can and can't mix - again with plenty of examples.

The remainder of the section is given over to the anatomy of printed pages, and the design of multiple grids. Again, dozens of examples are given with detailed explanations regarding margin widths, typefaces and sizes, leading...in fact the text goes into design rules that I never knew existed, yet remains remarkably easy to understand. Throughout this section the body text in the examples is written in Latin, encouraging you to study the layout and design of the page, rather than what is actually written on it.

2 Portfolio

The second section is divided into three chapters covering a broad selection of publications, with designs ranging from the simple to the intricately complex. Subjects

give page after page of example flyers, posters. newsletters, adverts, etc. Instead, the chapter progresses steadily through example grids, headline and typeface do's and don't's, graphic do's and don't's and so on, then encourages the reader to create pages with regard to these guidelines, rather than cataloguing someone else's creations for you to copy frame by frame. The usefulness of this approach probably depends on how creative you actually are, but I can see no harm in either method.

Printing and Binding

This is essential reading for anyone intending going the whole hog and producing a complete printed and bound publication. It details the traps and pitfalls that can end up costing you a fortune in wasted time at the printers, and also discusses the merits of the various printing techniques and processes available, along with a good explanation of printers' jargon.

Colour

This section will be of most interest to smug PageStream 2.1 and overtly wealthy Calamus SL/ Didot Professional users who at the moment rank as the only ST DTP'ers who will have more than a passing interest - or potential - in CMYK colour separations and the like. Again, all the various electronic colour output options are discussed, but manages to keep aspiring goggle-eyed DTP fanatics' feet on the ground by examining just exactly what is involved, its associated cost, the many pitfalls, and not least the horrendously powerful hardware setup you need to handle such tasks in anything more than an amateur capacity.

Document Handling

No, this doesn't give any advice on how to pick up printed sheets without getting smudged thumb prints and the like all over the place, but rather an overview of Proofreaders' marks, the ubiquitous style sheets, and high resolution imagesetting tips.

Hypermedia

Not quite in context with the rest of the book, this chapter nevertheless makes interesting reading, examining the impact that hypermedia is going to have on the printing and publishing industry in general - several existing systems are looked at, such as CD-ROM, CD-I, Digital Video Interactive - even Commodore's struggling CD-TV makes a brief appearance. Quite whether computers and VDU's will ever replace books, magazines and newspapers remains to be seen, but this section provides some very interesting food for thought...

The publication is rounded off with a small and not very extensive glossary and perhaps represents the weakest part of the whole publication.

Fortunately, "Collier's Rules" aren't really rules at all, simply general guidelines to help you avoid common errors while demonstrating professional tricks and techniques which have obviously been learned the hard way over many decades - techniques which can make the difference between an attractive layout and a stunning one. As an extension to any ST based DTP package's manual, DDAT cannot be recommended strongly enough, and in particular, users of packages which support outline font technology, such as Calamus, FSP3, and especially PageStream 2.1 should not be without a copy. At £14.95 it is within everyone's grasp, and is more informative than many similar publications costing twice or three times as much. And for anyone considering going into DTP for commercial gain, this book is absolutely essential reading - period. All this, coupled with its excellent readability and fair smattering of humour, make it one of the best general DTP guides I have yet come across in seven years of computing. And as far as any purported creative restrictions go, in the words of the author himself: "Once you've learned the rules - break them!"

About the Author

David Collier is regularly featured in design journals and on television as an authority on desktop publishing and creative design, and has been aptly named as one of the faces to watch in the design industry of the 1990's. He is a leading exponent of new computer-based technologies and the author of two other books, *"Designing for DTP"*, and *"Desktop Publishing Source Book"*.

Title:	Collier's Rules for Desktop Design and Typography
Authors:	David Collier with Alex Gollner and Lynn Clark
Publisher:	Addson-Wesley Publishers Ltd. Finchampstead Rd Wokingham Berkshire RG11 2NZ
Pages:	140
Price:	£14.95
ISBN:	0-201-54416-4

covered include health, education, manufacturing, politics, fashion, law, and art. Some examples were created by freelance designers, others by top DTP studios, and the level of graphical sophistication varies considerably. The first chapter covers flyers, posters and brochures. The next deals with newsletters, journals and magazines. Data sheets, catalogues and forms covered in the final chapter. Again, all the examples are accompanied by a detailed discussion of the page makeup, this time from the original designer, explaining why he/she chose a specific typeface, border, grid etc. As a sourcebook, this section is invaluable. No matter what sort of publication you are planning, you will find at least one suitable example - if not several - which will drum up some inspiration. All of the examples are monochrome, and there was very little that most ST DTP software could not handle. This is relative to your hardware/software setup, of course. If you had PageStream 2 or Calamus together with a flatbed scanner, suitable retouching software and a good variety of fonts, then there is hardly anything in this book that you could not recreate. Running Timeworks on a 1040ST with a few GDOS fonts is obviously more limiting, but there is still plenty that can be perfectly recreated. In fact, following the guidelines in this book, it is amazing what you can do with a relatively cheap hardware/software combination. After all, the system is only a tool - and to a large extent, how skilfully and creatively you use that tool is entirely down to you.

3 Hands-on Projects

The final section is a tutorial specifically for Aldus Pagemaker 4 users. Nine projects are covered from creating simple award certificates and small space adverts, right the way through to tabloid advertisements incorporating photographs and colour. Again, as an ST user, it would be easy to write this section off, but it is worthwhile reading through it since there is a great deal that applies to current ST software. In fact, I was surprised just how well PageStream 2.1 coped with the tutorial. Even when a directly equivalent feature was not available, it could often be worked around using a combination of other functions. In fact, using PageStream with Megapaint II Professional enabled me to produce results just as impressive as those illustrated in the book, with the exception of large scanned photographs and colour which I haven't the facilities to handle. Maybe this justifies Softlogik's claimed cure for Mac-Envy....

Conclusion

This is one of the few DTP books I have come across that can justify its rather hefty price tag - but then again, don't expect anything aimed at the Apple market to be budget oriented. However, in this case you certainly do get what you pay for: 424 pages packed full of information and ideas. This, coupled with its readability and dual tutorial/reference abilities, allows me to recommend it without reservation. Put it on your Christmas list!

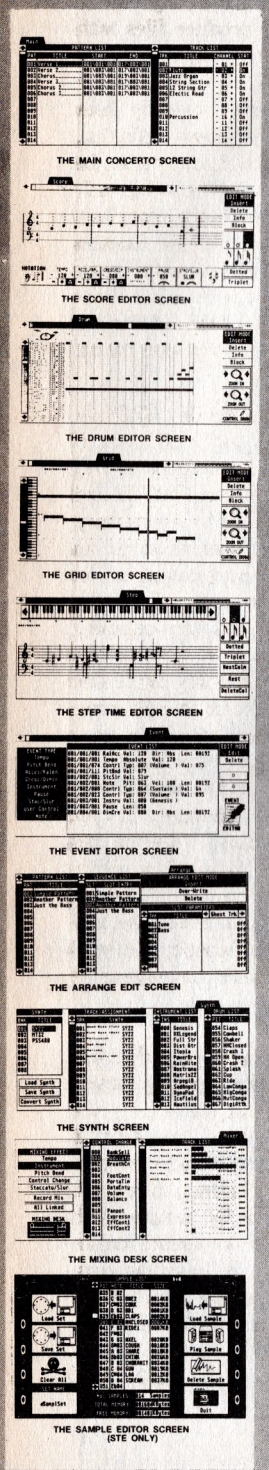
About the Authors

Ronnie Shushan and Don Wright have extensive experience in both book and magazine publishing. They are currently partners in *"Broadview Media"*, where they specialize in desktop publishing.

Title:	Desktop Publishing By Design - 2nd Edition for Aldus Pagemaker 4
Authors:	Ronnie Shushan & Don Wright
Pages:	424
Publisher:	Microsoft Press
Price:	£26.95
ISBN:	1-55615-364-3

complete

The complete MIDI sequencing solution



CONCERTO is a powerful but friendly music program with which you can compose and arrange any type of music from Classical to Rock, Pop, New Age and Jazz. Use it with any MIDI instrument. Simple, step-by step instructions help you set up the program and equipment.

CONCERTO is mouse-driven with keyboard short-cuts for most operations. It has easy-to-use GEM-like controls but with many advantages over GEM such as the 'instant scroll' function of the scroll bars and optional pull down (rather than GEM'S pop down) menus. The unique Card Tab Index system gives you instant access to nine control screens.

In CONCERTO you can record music on up to 24 Tracks and assign them to 100 Patterns. Link the Patterns together in the Arrange Window with a few simple mouse clicks to form a complete Song. Making music has never been easier.

CONCERTO has five Editors:-

The Score Editor shows music on the stave in traditional notation. Notes can be clicked into place on the score and Staccato and Slur instructions let you control the phrasing and articulation of the music. Programmable Pauses (Formata) avoid messy tempo change instructions.

The Step-Time Editor is ideal for entering difficult music lines a note or a chord at a time directly from your keyboard. You can also enter notes from an on-screen keyboard, useful if you have a keyboardless expander such as the Roland MT-32.

The Grid Editor is ideal for users who don't read music. A cross-hair cursor makes it easy to get the pitch and duration of the notes exactly right.

The Drum Editor simplifies and aids the creation of drum patterns making it easy to program rock steady rhythms. The Drum Operations window contains powerful drum edit tools including Velocity Changes and drum substitution.

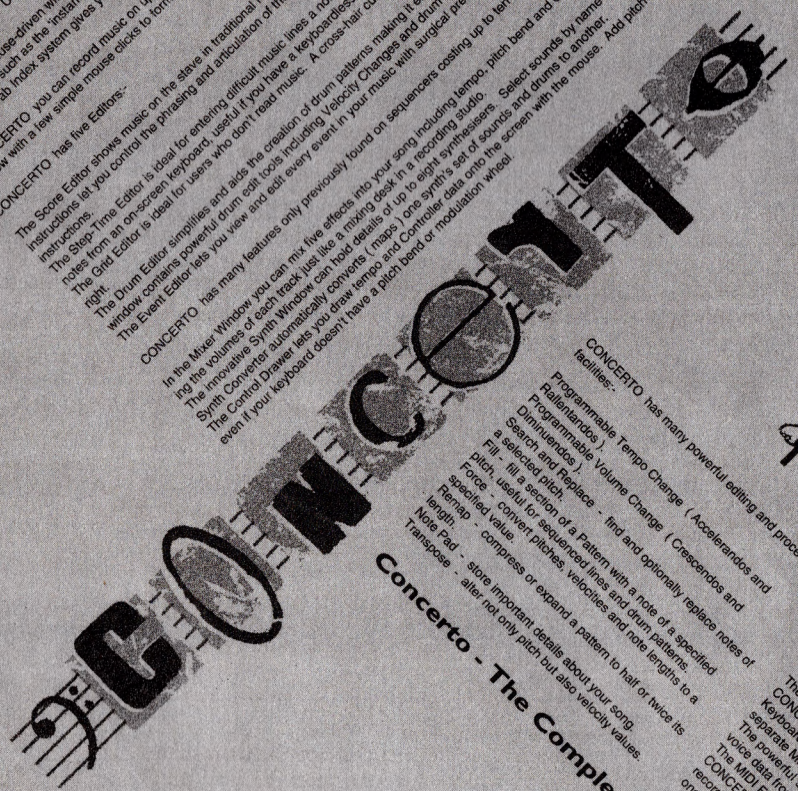
The Event Editor lets you view and edit every event in your music with surgical precision.

CONCERTO has many features only previously found on sequencers costing up to ten times as much:-

In the Mixer Window you can mix five effects into your song including tempo, pitch bend and Control changes. You can 'ride the faders' mixing the volumes of each track just like a mixing desk in a recording studio.

The innovative Synth Window can hold details of up to eight synthesisers. Select sounds by name and click them into the score. A unique Synth Converter automatically converts (maps) one synth's set of sounds and drums to another.

The Control Drawer lets you draw tempo and Controller data onto the screen with the mouse. Add pitch bend or modulation to your music, even if your keyboard doesn't have a pitch bend or modulation wheel.



CONCERTO has many powerful editing and processing facilities:-

Programmable Tempo Change (Accelerandos and Rallentandos)

Programmable Volume Change (Crescendos and Diminuendos)

Search and Replace - find and optionally replace notes of a selected pitch.

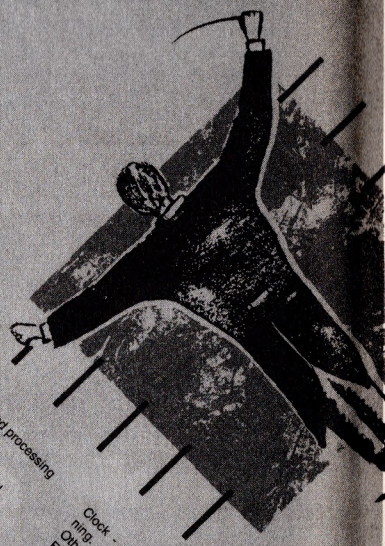
Fill - fill a section of a Pattern with a note of a specified pitch, useful for sequenced lines and drum patterns.

Force - convert pitches, velocities and note lengths to a specified value.

Remap - compress or expand a pattern to half or twice its length.

Note Pad - store important details about your song.

Transpose - alter not only pitch but also velocity values.



Clock - shows exactly how long the 'tape' has been running.

Other useful built-in features include Disk Format, New Folder and Rename file operations.

CONCERTO has a wide range of powerful MIDI tools:-

The MIDI Filter will filter out unwanted MIDI instructions and CONCERTO'S special effects.

Keyboard Split lets two halves of any keyboard record on separate MIDI channels.

The powerful Systems Exclusive function can save and load voice data from your synths.

The MIDI File Converter converts Standard Midi Files into CONCERTO format giving you access to vast library of pre-recorded music. You can also pass on your music to anyone with a MIDI file-compatible sequencer.

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GNU C++

The ST's First C++ Compiler

Reviewed by David Harvey

Readers of PC magazines will have noticed over the last year or so that one programming language in particular has been getting a great deal of attention. In the next few years, C++ is set to supplant C as the standard PC/Unix development language. C++ is a superset of C, with object-oriented extensions (see last month's ST Applications for an overview of the language): whether you adopt the pragmatist's view that such extensions of C guarantee the usefulness of the new language, or hold the OO purist's opinion that it is a hybrid, of dubious parentage and possibly even more 'dangerous' than C, with the likes of Microsoft and Borland weighing in behind C++ its future would appear to be assured.

I'm a Gnu....

In its pre-HiSoft incarnation, the Lattice C compiler tentatively played with a C++ preprocessor, a product which was never released as it performed unreliably at best. Until HiSoft can be persuaded to upgrade the (now superb!) Lattice C v5 to C++, the only C++ system available for the ST is the Free Software Foundation's GNU C++. As will become clear from this review, this cannot be regarded as a perfect solution (and I hope it won't be the last word in C++ systems for the ST): as it is the first, though, it deserves consideration. It turns out that the system is at least adequate for initial experimentation with the language.

The FSF is a US organisation dedicated to the ideal of free software. Its flagship product is an operating system and associated utilities which go under the name of GNU. This stands for "Gnu's Not Unix", a recursive definition in keeping with the somewhat offbeat nature of the enterprise, but which belies the quality and extent of FSF software. (It also makes possible a number of amusing ruminant jokes - for example, GNU's version of YACC, the Unix compiler-compiler, is called BISON.) Typically, FSF software is distributed in source-code as well as executables, which is another important aspect of the FSF philosophy.

Contents, system requirements

GNU C++ is supplied on five double-sided discs, with all files archived. The contents of the package is impressive: apart from the C++ system itself (version 1.37, comprising compiler, linker and other executables, header files and object libraries), you also get a complete ANSI C programming system (GNU C 1.35), the GNU MAKE utility, PML (a portable library of mathematical functions) and MKPTYPES, a utility for extracting C/C++ function prototype information from source files. Source code is provided for all C++ and C library functions (reading these is an education in itself), and for MAKE and PML. Finally, the ZOO archive program is included for unpacking the files, and the popular Gulam shell as a basic development environment (like the Unix tools on which they are based, all GNU programs are command-line driven).

As with much FSF software, the documentation provided is minimal. (I suspect that the versions of FSF programs on the original UNIX platforms are adequately documented, and that these files get left by the wayside as the systems are ported to other environments. If anyone knows of a reliable source of current FSF software documentation, I'd be glad to hear from them!) You will not be able to teach yourself C++ on the basis of this package alone - see the panel for a couple of recommended books. As GNU software is closely based on Unix, standard Unix manuals are helpful when it comes to command line structure, parameters and flag options and so on, and it is from these sources that much of the information in this review is derived. The Gulam documentation is included, but for the C++ system itself there is only a short README file in German, which gives installation instructions and (very!) brief notes on compiler options and use of the libraries.

The language as supported by the GNU compiler is not the most recent. It sits between the C++ described by its inventor, Bjarne Stroustrup, in the first edition of his book The C++ Programming Language and that of the second. Two features described as experimental in the later edition are Exception Handling and Template Classes. There is an attempt to implement the second of these, with pattern headers which must be run through a special program to generate source code and class library functions for specific versions of generic classes: unfortunately this program is not provided, and in any case it depends on being able to produce files with names such as stack.int.h, possible on Unix but not under TOS. A specification for Exception Handling has only recently been formally adopted in the language definition, so it is not surprising that it is missing in the GNU system. There are a few other differences: the most annoying is the compiler's inability to accept an inline member function definition within a class declaration (no error message here, just the familiar bombs). However, multiple inheritance (the ability to define a class with more than one parent class) is supported.

The stated requirement for running GNU C++ on the ST is a system with hard disk (about 9 MB required for a full installation, with sources for C and C++ libraries, MAKE and PML), and at least 2 MB RAM. The memory requirement unfortunately seems to be an absolute - as GNU software originates on UNIX systems, large amounts of system memory are assumed, and the compiler quickly runs out of space on my 2.5 MB machine if header files containing large class definitions are included. As far as disk usage is concerned, I see no reason why the system should not be run successfully on a double-floppy system: the supplied C++ class library (the largest of the object libraries) is some 170K in size, and not all the C++ header files are needed (the ST C++ library does not include all the classes provided). With careful planning, such an installation should be possible, although some disk-swapping between compile and link stages would be required.

Installing GNU C++

Creating a GNU installation on a hard disk is relatively simple. If you don't already have a command shell, the first step is to copy the Gulam shell and start this - installation is much easier from a command-line environment than from the GEM desktop. It is worth spending some time becoming familiar with Gulam: the manual is comprehensive and informative. A directory \GNU must be created on whichever disk partition you wish to use (existing GNU C users will already have one of these). Copy ZOO.TTP from the first disk to this directory, then use ZOO to unpack the following files:

EXEC.ZOO
EXEC2.ZOO
GLIB.ZOO
GLIB2.ZOO
INCLUDE.ZOO
LIB.ZOO

The command zoo x// A:\exec (for the first file) instructs ZOO to create the directory structure stored in the archive before restoring the archived files to their correct places. This should be done for all the archives listed above. It speeds things up if the archive files are first copied to the \GNU directory - they may be deleted after unpacking the data.

If you wish to load MAKE, PML and MKPTYPES, then the archive files are unpacked using ZOO as above, except that

directories must be created manually for each of these. The appropriate directory must be current when ZOO is run, as the unpacked files will be placed in the current directory.

Having unpacked all the files, you will need to correct the effects of a bug in the ZOO program. Files archived with a '+' character in their filenames are restored with 'r' in place of the plus sign. A number of GNU C++ files have '+' or '++' in their names (for example, **g++.ttp**, **crt0+.o**): use the Gulam **mv** command to rename these to their correct equivalents (e.g. **mv exec\grr.ttp exec\g++.ttp**). Finally, if you intend to use Gulam as your GNU development environment, you will need to edit the file **gnu.g**. This is a Gulam batch file which contains settings for the environment variables required by GNU programs. Unless you have a full GNU installation, you won't need all the file: you should at least keep all lines which control standard GNU defaults (temporary file directory, command prefixes) as well as those which apply specifically to C and C++ (library and header file paths), changing the drive and path names identified to those which exist in your own installation. Before running the compiler, you must execute this batch file to initialise the GNU environment.

Hello world? Using GNU C++

Having got this far, you may be keen to compile and link your first program in C++. Unfortunately, there seem to be problems with the way the C++ programs get their environment variables (I think this is due to environment variable names such as G++LIB: '+' seems to be used as a delimiter of some sort in Gulam, which means values are not correctly retrieved). Moreover the linker runs with a dubiously small default symbol table which invariably generates 'out of space' messages for even the smallest programs. After much experimentation, frustration, and diving about in Unix manuals, I have come up with the working solution described here.

The GNU C++ compiler, like the earlier GNU C compiler, is a multi-pass compiler, with separate programs for preprocessor, compiler, assembler, optimiser and linker. A single driver program is supplied which is used to call some or all of the compiler passes and linker, depending on the options passed on the command line. This gives a considerable amount of flexibility, as each program may also be called independently. The most important options for the G++ program are:

-o<name> used to specify the name of an output file from the linker. By default (and as in Unix) the executable is named a.out, which is not a great deal of use.

-v makes the programs display their name and version as they are called. This is useful to check up on the progress of a compilation.

-c instructs the compiler driver to produce object files only (no link is performed).

-S instructs the compiler driver to produce assembler output (the assembler and link passes are not called).

-E instructs the compiler driver to run the C/C++ preprocessor only. Useful if you are not sure about macro expansions.

-I<path> defines a search path for files that are #included in a C++ source.

-L<path> defines a search path for library files during linking.

-l<lib> identifies an extra library to be searched during linking.

The command line for the g++ program may contain any number of input filenames in addition to the options described above. Files with extension .C or .CC are preprocessed and compiled: the assembler is run on files with extension .S, and object files (extension .O) are passed directly to the link phase. An example:

```
g++ -v -Ig++lib\g++-inc test.cc x.o
 -Lg++lib -Llib -otest.ttp
```

This compiles test.cc (using the path g++lib\g++-inc to search for include files), linking the result to the file x.o, and searching for referenced symbols in default libraries in the directories lib and g++lib. The -I option above must be used with GNU C++ on the ST, at least when using the Gulam shell. If invoked using g++, the linker automatically searches the default C++ class library g++.olb and the C standard library gnu.olb, which it will attempt to locate in the two directories specified above. In addition, a standard start-up file for C++ programs (crt0+.o) is linked by default.

Unfortunately, the linker soon runs out of symbol space. This can only be overcome by compiling and linking separately, which means using the -c flag when g++ is run, invoking the linker (gcc_ld++) directly. The linker works with a default symbol space of 400 symbols, which is soon exhausted by C++. There is presumably a way of increasing this default (I have not yet discovered this), but the problem can be overcome by instructing the linker not to store unnecessary symbols (-S) or debugging information (-s). However, if the linker is called explicitly, it needs to be passed the names of the default start-up code object file, and the names of the default object class and C function libraries. To compile and link a file successfully, then, the following two commands must be executed:

```
g++ -c -v -I\gnu\g++lib\g++-incl test.cc
gcc_ld++ -C -S -s -L\gnu\g++lib -L\gnu\lib
\gnu\g++lib\crt0+.o test.o -lg++ -lgnu
-otest.ttp
```

(N.B.: the link command is one line only!) These commands may be placed in one or two batch files, which accept the names of the input files as parameters. This simplifies use of the package considerably (these batch files have been added to the GNU C++ disks in the ST Club's PD library).

GNU Object Class Library

If a programming system is to be of any real use, it must support the abstractions with which programmers work, and must interface with the environment for which production code is intended. These issues are addressed in C by object code libraries (for example, by providing functions to manipulate files, databases, graphic user interfaces), and in C++ by class libraries. GNU C++ as implemented on the ST does not include class support for the GEM AES or VDI (an indication of how this might be done was given in the C++ article last month), although the standard GNU C system included has the usual GEM bindings. Apart from some utility and support functions, the GNU class library includes the following modules supporting C++ classes:

st_file TOS-specific versions of standard C++ File classes.

stream The basic stream i/o classes for C++. Note that these are somewhat old-fashioned: most recent C++ systems (for the PC and other environments) have adopted a different form of these classes.

plotfile Another file class, this time a simple class designed to produce graphic files which may be sent to the Unix **plot** command.

sfile A final file class, allowing more structured access to binary file data.

string Strings as objects, including classes to support regular expression processing.

integer An implementation of an integer class allowing arbitrarily large numbers to be represented.

rational Rational numbers.

complex Complex numbers (with real and imaginary components. Much used by engineers, also significant for generating fractals such as the Mandelbrot set.

fix/fix16/fix24 Classes for various types of fixed-point arithmetic.

bitset Set operations on bitfields of any size

bitstring Like bitset, except implementing classes supporting a concept of a string of bits.

This looks like an impressive collection, although I doubt that some of the classes would see much use outside academic or engineering circles. The major drawback is that all but the file, stream and bitset/string classes are impossible to use on an ST with less than 4MB RAM. An appropriate header file must be #included if a class is to be used by a program. The class definitions in integer.h, for example, are so extensive that the compiler runs out of memory on my ST when this is #included in a source file. The integer and string header files contain a large number of inline functions (roughly equivalent to macros in C: although declared and used as functions, their code is placed inline in the compiled object, rather than called in the normal way). An attempt to improve matters by moving these out of the header files and turning them into ordinary C++ member functions was not successful: the classes defined are just too large for the compiler on my ST, and may even cause problems on a 4 MB machine. This is disappointing: while perhaps understandable given the luxury of large amounts of RAM on Unix machines, the fact that C++ compilers exist on

PCs (and have done for two or three years now) indicates that this is not an insurmountable problem, and that the GNU C++ system needs serious attention in this area.

Final thoughts

In spite of this, the GNU C++ system is still more than adequate for anyone wishing to take some first steps with the language. The basic stream and file classes do not generate compiler memory problems, making using the system at this level feasible. It should be possible to work through any of the introductory C++ texts with the system, as most of these are concerned with class design and implementation, and not the use of libraries.

Exercises and examples in many of these involve writing a basic String class, which need not be as comprehensive as the production-standard version supplied in the GNU class libraries. Once you have cut your OO teeth on a task like this, you might be encouraged to attempt a greater challenge, designing classes that can be used to model the GEM AES and VDI: as these will not need to access streams and files, you have the possibility of building classes from the bottom-up, so if you can keep your classes small you will probably avoid the memory problem. If your ST configuration is up to it, and if you want a taste of the decade's most important language without having to wait for a commercial implementation, then GNU C++ is worth much more than its price of five public domain disks.

In last month's C++ article, the double chevrons (« and ») were replaced by single ones. The output statement should have read:

```
cout « "Hello C++ world! " « year « "\n";
```

Product:.....GNU C++ 1.37/1.35

Supplier:.....ST Club (PD disks PDE.38-42)

Manifest:.....5 double-sided disks, archived.

System:.....ST with at least 2MB RAM, hard disk.

The disks have been supplemented with a copy of this review, GNU batch files for running the compiler and linker programs, and the example GEM program from last month's *ST Applications*.

The package also includes GNU C 1.35, the Gulam shell and the ZOO archive program.

Further Reading

Bjarne Stroustrup: ***The C++ Programming Language*** *(2nd Edition).* The standard work, much more comprehensive (and considerably better written) than Stroustrup's first attempt. Contains an introduction to the language, some good chapters on OO design and C++, and a reference manual for the language.

Stanley Lippman: ***A C++ Primer.*** A more directed tutorial approach to the language than Stroustrup's book. A touch dry, but very thorough.

Both are published by **Addison-Wesley**, in paperback at around £25.00. There is an explosion in the numbers of books on C++. Avoid anything with 'Turbo' in the title, or those books describing user interface or graphics programming: these will tend to be specific to particular computers and compilers (yes, mostly IBM PC).

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Inside The TT

by Paul Rossiter

Following the recent re-positioning of the TT (price cuts!) in the market place it may now appeal to more users. Previously, the TT was overpriced and underpowered. Now though, there may be plenty of ST users with hard disc drives and large monitors who could upgrade to a TT without paying a fortune or ending up with unwanted extras such as the horrendous TT colour monitor. The only things to confuse the buyer are: what will the much rumoured new TT be like, and how much will it cost?

The TT Explored

At the time of writing there are numerous rumours as to the future of the TT, rumours about re-designs of the TT, new TT's, etc., etc. This article concentrates on the existing TT and its performance and design issues. Most of the limitations discussed here will, we hope, be rectified on the next release of the TT, but knowing Atari - don't bank on it!

History again

When the TT was originally designed its performance was quite impressive: a second generation 68000, the 68030 (see box), running at 16MHz with VGA graphics and lots of memory and a fast hard disc; who could want more? It was price-competitive with PC clones at that time, with better graphics and a FPU built in, a GUI and no problems with mouse drivers and so on. The problem was, by the time it materialised technology had moved on but the TT hadn't, and a nasty reaction from the Germans soon convinced Atari US to try and bolster the TT's performance up to reasonable levels. Unfortunately, they did this by a cheap kludge which only addressed half of the problem. This accounts for the less than sparkling performance of the TT: its paper specifications make it look much better than it really is - the uprate of clock speed from 16MHz to 32MHz only improves performance by around 30% instead of the 70-80% which would be expected.

Speed me up

The designers were obviously given a brief to 'beef up the machine' on a budget of $50 and two days. They settled on replacing the 16MHz processor with a 32MHz one and changing the 68881 floating point unit for the 68882. Unfortunately, the 68030 only has a very small cache built in (256 bytes data and 256 bytes instruction) and the resultant speed increase is small.

The main busses are run at 16MHz. They need to be resychronised to the CPU which once again costs in speed terms. The 68030 can support dynamic bus sizing to allow easy access to devices that only use 8 or 16 bits (smaller words are shifted around internally within the 68030 to appear on the top data lines). This is performed with PALS and TTL logic (Fig 1).

Modern memory modules are not fast enough for true high speed access and wait states are normal. This is where a large memory cache comes in handy. The TT has trouble using even the FAST Ram properly - there is the advantage of only requiring relatively slow memory modules: 90Ns access time will do. The 68030 supports 'burst' mode, which enables four long words of data to be fetched into the 68030 in half the time of normal memory fetches. The memory chips themselves must support static column or page mode for this to work, however.

ST RAM

The base TT has 2MB of ST Ram. This is very interesting as it is 64 bits wide and directly mounted on the main board. By adding a daughter board, another 2MB of ST Ram may be added. The ST Ram is capable of 24MB/second data rate, which would satisfy a 16MHz 68030 and leave enough spare bandwidth to drive a video display of similar resolution to the ST. As the 68030 cannot handle 64 bits, Atari designed an ASIC called 'FUNNEL' to interleave the 64 bits down to 32 bits for the 68030 and down to 16 bits for the video and sound. Any extra ST RAM has to be added on a plug-in daughter board carrying its own MMU and 16 256Kx4 DRAMS. If the DRAMS are swapped for 1Mx4 then the plug-in board will support 8MB: this, added to the 2MB on board, gives a possible 10MB of ST RAM (Fig 2). (If the RAMS were changed on the motherboard as well, the TT could support 16MB of ST RAM!)

The Video

The TT can produce all of the old ST resolutions and also enhanced modes (from 256 colours in 320 by 200 pixels up to 16 colours in 640 by 480 pixels). Instead of an old crude resistor ladder network the TT has a real DAC, which produces the colour modes up to VGA standard (Fig 3).

The mono output is exceptional: at 1280 by 960 pixels with a 70HZ refresh rate it gives a rock steady image perfect for DTP applications. The mono signal is generated by a National advanced graphics chip, with an output of around 120MHz. To drive this chip the DP8530 is used as a PLL frequency multiplier, and in order to produce a good clean signal Atari decided to implement the mono circuitry in ECL, which gives very good quality but needs a suitable monitor (or conversion circuitry) (Fig 4).

The Atari mono monitor SM194 is vastly overpriced. Protar can supply their re-engineered Philips 19" monitor for half the price and its image quality is

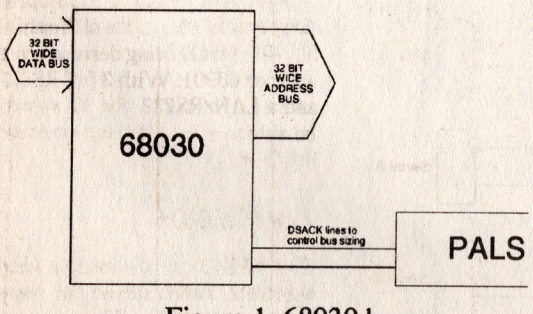

Figure 1 68030 busses

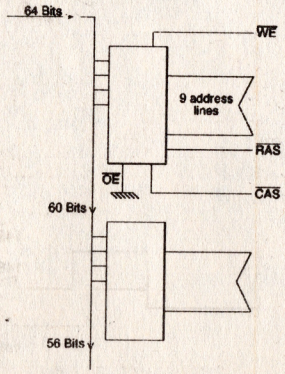

Figure 2 ST Ram (2 MB)

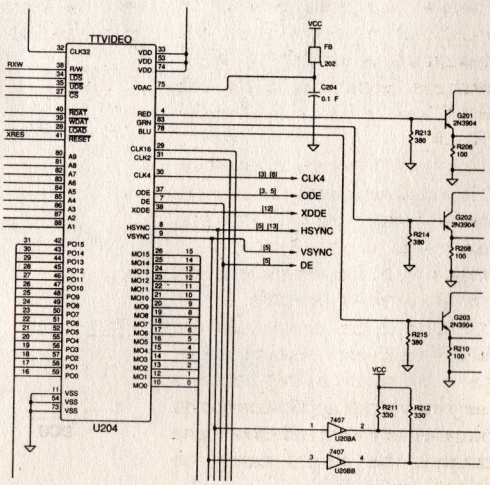

Figure 3 Colour Video

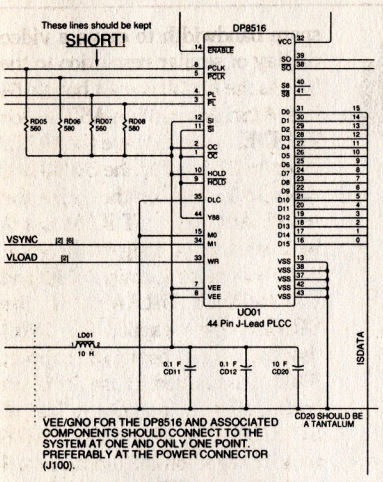

Figure 4 Mono Video

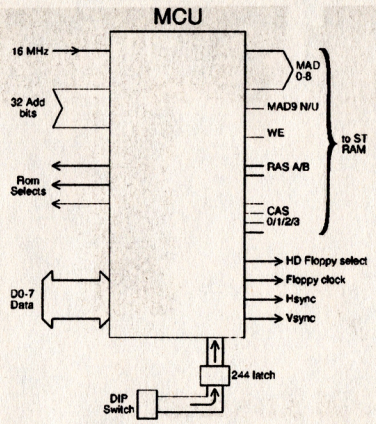

Figure 5 MCU

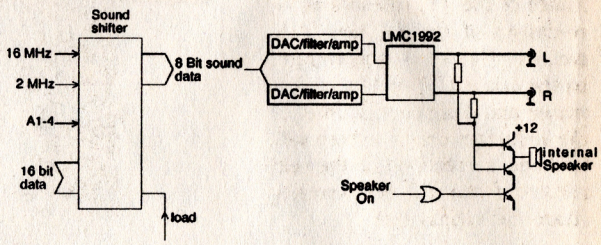

Figure 6 Sound Shifter

superb; for monochrome DTP this setup is hard to beat - allowing the display of 2 A4 pages side by side with readable 10 point text.

Interestingly, if the designers had used an off the shelf controller and video RAM they could have saved on having 2 video shifters, the FUNNELS, etc., and had better video as well! Still perhaps they will get it right next time. At the moment there are some incredibly sophisticated video controllers available for very little expense, and this may percolate through to the Atari designers.

The MCU

This is the memory control unit which basically works like the old MMU/GLUE of the ST. It controls the memory, ROM access, floppy clock selection, real time clock access and video sync generation. The 68030 is clever in that is has on-board memory management, which allows it to remap peripherals (or any other memory in 8K blocks) anywhere it likes: the peripherals can appear at hex FFFFxxxx or at hex 00FFxxxx. This eases problems between 24 and 32 bit addresses. Also, this remapping is needed to allow memories larger than 16MB - the 68030 can handle 4GB directly! (Fig 5)

On the TT there is an 8 position DIP switch which may be read by the MCU asserting CCS (configuration chip select). According to Atari only bit 7 is used at present, this determining whether or not HD floppies are present. As the 68030 has its own memory manager true multitasking becomes very easy; each application has its own memory area and even if one crashes the others carry on uninterrupted.

MIDI

The ST, as one of the first micros to have a MIDI port built in, actually had a good, reliable and efficient port in it, and the TT designers, seeing no need to change what already works, simply carried it over to the TT. It comprises an OPTO isolator and works as a current loop over quite long lines at a fixed frequency of 31Kbaud.

Keyboard

Once again the ST had an efficient keyboard with its own 8-bit micro to handle key presses and mouse movements. To ensure compatibility this has also been employed again in the TT. One interesting variation is that the new UNIX TT has a three button mouse which is essential for running X-Windows. Does this mean that there is support for the third button built in or does the keyboard need replacing when upgrading to UNIX?

Old Sound

The original ST had a crude sound chip (the Yamaha YM2149) which also handled the floppy drive and side selection and the printer port. Having to maintain compatibility can become a millstone and so this awful chip is once again used in the TT, and its old problems of not enough printer drive remains. The only possible benefit is that the port is still programmable to allow its use as an input or output port. The floppy select lines were also under-driven, and the TT now actually buffers these. Interestingly, the buffers are enabled via a signal called PWRGOOD (power good): if the power supplies aren't up the floppies cannot be accessed.

New Sound

Since the introduction of the ST-E the range has had good quality 8-bit Stereo PCM digital sound. The TT carries this on in a similar vein. To handle the sound there is an Atari-specific chip called SNDSHIFTER, which controls the sound replay timing. Note that the sound data must be in ST RAM as it is fetched in a similar manner to the video. As the sound is 8 bits wide the chip has to multiplex it down as it is fetched from the 64 bit wide RAM (Fig 6).

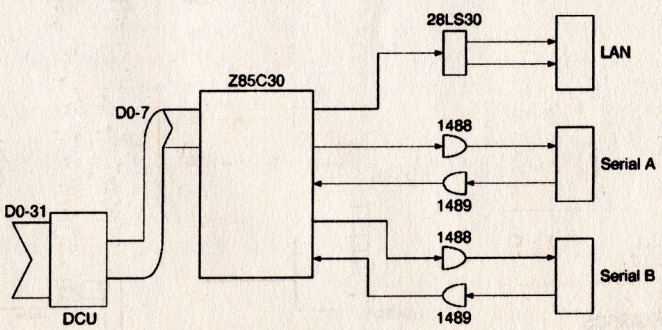

Figure 7 LAN

LAN and Serial ports

When it comes to serial ports the TT is very well endowed. The main chip used is the Zilog Z85C30, a bit long in the tooth now but a very good multi-protocol serial controller; it can transfer at around 1Mbit per second sychronously and 250Kbit asynchronously. To enable this chip to drive long cables quickly the TT has some heavy duty fast push pull buffers (28LS30), which should drive 50 metres or more of LAN cabling. The LAN implementation is synchronous to allow fast data rates, the serial ports are asynchronous as usual. One interesting point is that serial port 'A' is the same channel as the LAN, so that only one or the other can be used at a time.

In order to allow maximum throughput the TT LAN has DMA support. It seems a shame that the hardware for the LAN is there in place but lacking decent software to drive it. Other platforms (Apple, PC, Sun, etc.) all have excellent networks available at low cost. The ST/TT is sadly lacking.

Serial port B comes from the second half of the Z85C30 and is a general purpose RS232 port.

Port C is the same 68901 produced serial port as the old faithful ST with port D being derived from another 68901. With 3 full RS232 and a LAN/RS232, the TT should be able to cope with any eventuality (Fig 7).

The VME Bus

The VME bus is a widely used standard, which allows for very exotic setups. The TT (of course) doesn't implement it completely - it can only act as a slave not as a

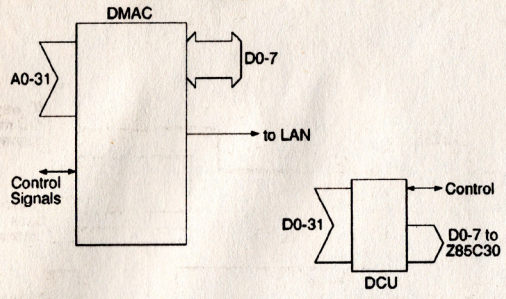

Figure 8 DMA

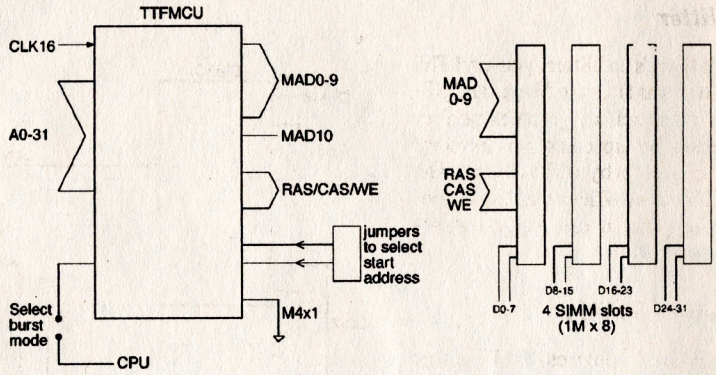

Figure 9 Fast RAM

master but it should still be of interest to some add-on designers. It has 24 address bits and 16 data bits, the latter being achieved by the 68030's dynamic bus sizing. At present the only addon that I am aware of is the Crazy Dots graphics card from System Solutions.

DMA

Even with a 68030 it is better to transfer large amounts of data around (to/from disc etc) under DMA control rather than letting the processor do it (the 68030 is very slow at interrupt response which is used for disc I/O). The DMA is handled with new chips designed especially for the TT. DMAC is the address bus interface and holds the address transfer registers and data count; it only has an 8-bit interface and so needs to use dynamic bus sizing to access its registers a byte at a time. The other DMA chip is the DCU, this is the FIFO memory portion of the DMA. It interfaces an 8-bit peripheral (SCSI) to the main 32 bit data bus. (The ST's DMA chip does the same onto a 16 bit bus.) This setup appears to be able to effect DMA transfers into both ST and FAST RAM (Fig 8).

The 68030

In the beginning was the 68000. This was released in 1980, contained around 68000 transistors, cost over £300 a chip and at the time was a stunning micro processor. The family has improved over the years with the 68010, the 68020, the 68030 and recently the 68040.

The 68030 is a vastly more powerful chip than the early 68000: it runs at 32MHz compared to the 8MHz of the usual 68000. The data bus on the 68030 is a full 32 bits wide as against 16 on the base chip. Inside, the 68030 has its own memory management, data and instruction caches, pipelining, dynamic bus sizing and more efficient micro-code. The instructions in the 68030 have been optimized in favour of common instructions at the expense of rare ones - this is a form of RISC operation with the benefit of complicated instructions should they be needed. Implemented correctly with fast memory or a large cache, a 68030 should be around 10 times faster than an 8MHz 68000.

The third generation 68040 is in a different league altogether and should perform three times faster than an equivalent 68030. This means that a good 68040 could be 30 times faster than a base ST! So a screen re-draw that takes 20 seconds using PageStream would become almost real time on an '040.

It is actually easier to design a good machine using the 68040 as the 68040 has a large high speed internal cache - this would easily achieve a 90% hit rate. Any extra cache is really only applicable to those 'macho' individuals who love to boast about their machine's features, along the lines of 'my cache is bigger than yours'. This may be seen in PC magazines as the computers are sold on features such as the cache size. Any prospective purchaser would be better advised to spend money on a faster bigger hard disc than on trivia such as caches.

Now that Motorola have released the 68LC040 at prices around £100 in quantity then cheap 68040 machines should become more common, the removal of the FPU not being a problem for most ST software.

FAST RAM

Once the 4MB ST RAM limit is reached then extra RAM may be added. This can be on an Atari board or from another manufacturer. The memory board has to have its own memory controller: the TT one is only clocked at 16MHZ, yet another example of how the design was not uprated properly for 32MHz operation. The FAST RAM board has 4 SIMM sockets and is normally supplied with four 1Meg SIMMS giving 4MB of RAM. If 4Meg SIMMS are used and a couple of jumpers added then the board should support 16MB (Fig 9).

Alternatively, if you have a TT without FAST RAM then System Solutions (Atari Workshop) can supply a German board which will not only expand to 32MB but is much cheaper than the Atari offering.

FPU

The TT supports a full speed 68882 floating point co-processor. This chip can take over from the main CPU to perform arithmetic calculations very efficiently and quickly. (Most IBM PC's up to 386 level usually have space for a co-processor but do not supply it as they are very expensive - the TT has it already fitted.) The drawback is that software must be compiled with the FPU in mind using special code libraries. The result is that only DynaCADD and a few other programs make any use of the FPU, a shame as some calculations can be over 50 times faster. Still, if the TT catches on then we may see some action.

SCSI

In order to maintain its compatibility with older machines the TT has a buffered ACSI port (DMA) which allows old hard discs, laser printers, etc., to be connected, but the data can only go into ST RAM.

As an addition the TT has a real SCSI controller, the NCR5380; this chip with its DMA support can move data at over 1MB per second - a pity that it is obsolete now, as its successor can transfer data over twice as fast. This SCSI port can put its data into FAST RAM or ST RAM.

If a TT is purchased without a hard disc then the user has a choice; the old drive (assuming it's boxed) may be used as an external drive and plugged into the ACSI port, or (much better) remove the mechanism, assuming it's a 3.5 inch SCSI drive, and fit it into the TT's case: this only needs a 50-way ribbon cable for the signals and the power cable fitting (Fig 10).

Floppy

At long last the HD floppy has arrived. This unit allows the use of High Density discs storing 1.44MB/disc. In order to use this the floppy controller has its clock frequency doubled to 16MHz whenever a HD disc is detected in the drive mechanism, and this allows twice as many sectors per track to be used. The floppy world has of course moved on a bit with 2.88MB floppies becoming commonplace - will Atari catch up?

The old floppy controller, the Western Digital 1772, was not specified to run at 16MHz which is necessary for HD operation. Atari firstly used an alternative source for these controllers but now, on the latest TT's, the AJAX chip has arrived, which replaces the 1772 and can handle HD floppies correctly.

Blitter

But there's no blitter, you cry! The blitter was fitted to Megas and ST-E's to speed up graphics performance by speeding up memory block moves by DMA control. The 68030 is so efficient at these operations that it can easily outperform a blitter.

Power Supply

As is usual in micros, the TT power supply is a switched mode unit which delivers plus and minus five volts together with plus and minus twelve volts. The original PSUS used in older machines were notorious for their unreliability. Let's hope that these are made a bit better.

Comment

Before rushing out to buy a TT, consider the total cost. A 2MB machine is no use, and so you will need to add up the cost of sufficient FAST RAM and a board to put it on. Alternatively, consider putting a 68030 board into a Mega. The Mega/68030 combination will be far faster than the TT, will have more compatibility in terms of software and memory constraints, most likely have a superior operating system (EOS?) and if the user has any large screen cards/monitors will save on disposal costs.

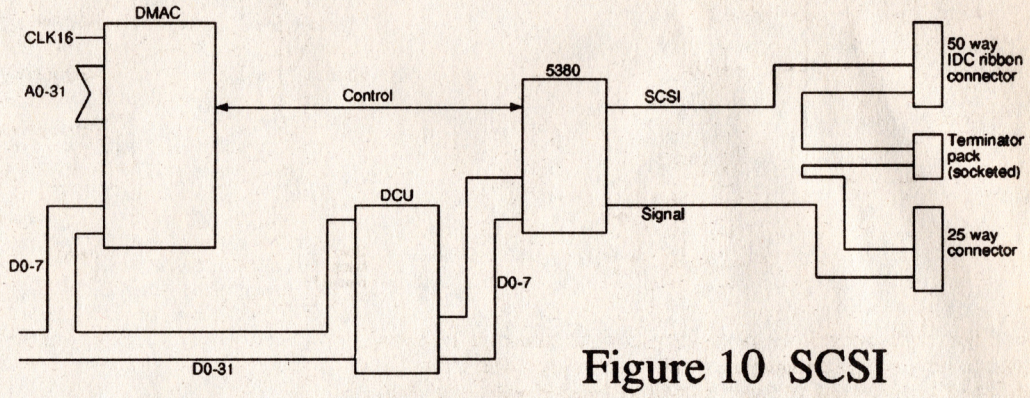

Figure 10 SCSI

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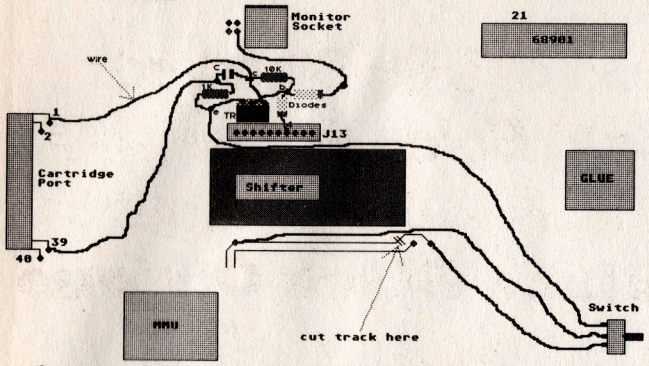
Fig 1



Overscan hardware mod for 520STFM by Jon Butler

Overscan

I've had the ST Club Overscan disk INF.29 for some time but only recently plucked up enough courage to have a go. The results were certainly worth the £3.00 or so to modify my STFM.

This modification should not be confused with the commercial Overscan kit which by all accounts solves many of the bugs and difficulties. This mod is certainly more difficult and should not really be undertaken by those with little or no experience of soldering/wiring. If you accept this mission do check your wiring carefully and observe normal precautions when wielding a hot iron over a fragile medium. Don't heat things up too much.

This article represents an aid to the excellent information on the disk and should be used in conjunction with it. Full marks to Stefan Hartmann and Carsten Isakovic for their information and software on INF.29.

INF.29 contains some Degas diagrams to show you where to connect the components and extra wires. Unfortunately, when I opened my ST the diagrams showed no resemblance to the insides of my particular version of ST hardware. I embarked on a little detective work to discover how to make Overscan fit.

It may be useful to point out my ST configuration before going further. It's a 520STFM upgraded to 2.5Mb with the Frontier board. I use a 40Mb hard disk and have a multisync monitor and clock connected. The TOS is dated 1986,1987. This is not the only set up on which Overscan works but if you have problems consider the differences between my set up and yours.

The components used for the project are listed below and available from Maplin Electronics and the ST Club.

- ST Club disk INF.29
- 2 1N4148 signal diodes
- 1 10KOhm 0.25w 5% Metal film (most other 10KOhm resistors would suffice)
- 1 1KOhm resistor (as above)
- 1 BC547b transistor or similar (check pinout of similar types)
- 1 100nF polyester capacitor
- 1 sub miniature toggle switch SPST (locking both ways)
- 2 meters of signal wire.
- 10 centimeters of sleeving to cover exposed connections.

I followed the circuit diagram on INF.29 called PIC1 and equated it to my ST as shown in my Fig 1. The 5V rail on the cartridge port was used to power the transistor (pin 1) and the 0V rail (pin 39) was used as the return. Thin signal wire was used to bring the supply over to the rear of the Shifter box to connect to the transistor. The transistor used was a BC547B which is the European equivalent to the BC550. Either can be used and cost 10p from Maplin.

Please note that fig 1 is not really to scale but more a London Underground style approach to drawing.

The Horizontal sync signal is taken from the unused solder lands for C31 adjacent to the monitor socket. The land to the rear of the monitor connector for C31 should be used. A thin signal wire was soldered directly to the land.

The Vertical sync signal is taken from the unused slot for Jumper 13 behind the metal box which houses the Shifter chip. The kathode of the diode (indicated by a black ring) should be soldered directly to the land of pin 4 of J13.

The anode of the Vertical sync diode is soldered onto the base of the transistor. The base is also connected to the Horizontal sync via a signal diode. I covered this diode with rubber sleeving to prevent shorting.

The 10Kohm 0.25W resistor is soldered between the base and collector of the transistor legs. The 100nF capacitor and 1Kohm resistor (0.25W) were soldered directly onto the transistors collector and emitter respectively, the other ends being soldered onto the 0V wire from the cartridge port connector.

The next step was to find the route of the Glue chip Display Enable signal which feeds the Shifter, MMU and 68901 chips. It is necessary to retain the feed from the glue to the 68901 but cut the track at a point where the Display Enable (DE) feeds both the Shifter and MMU. If the track is cut at the point shown in fig1 then the Glue DE still feeds the 68901 but is isolated from the MMU and shifter chips. The information on ST Club disk INF.29 differs from my ST here in that my 68901 receives the DE signal on pin 21. The other information is correct in that the shifter receives the DE on pin 37 and the MMU on pin 52. Pin 39 of the Glue chip generates the DE signal.

I mounted the switch in the lower half of the ST case just to the right of the numeric key pad. Connect the centre pin of the switch to the solder land after the cut track and the bottom pin to the land before the cut. The remaining pin on the switch connects to the emitter of the transistor. A small hole can easily be drilled in the side of the ST to accept the switch.

Software

The program Overscan.PRG should be placed in your auto folder and with the switch in the Overscan position it should boot up with all those extra pixels in any resolution. As expected things did not work out so simply.

My ST does not have TOS 1.4 which Overscan should work with and neither has it the old TOS from 1985 which it should not work with. My TOS is 1.2 from 1986 and could be the route of some of the software problems and other funnies.

Overscan did work, though, once I had rearranged the order in which my Auto files boot up, using the on/off switch to reboot rather than the reset button. I also discovered the virtue in waiting about 30 seconds before turning my ST back on, as not doing so creates a sort of 'dirty' boot.

The order of files in the Auto folder to make Overscan work on my system was found to be:

FOLDER100.PRG
GDOS.PRG
QUICKSTE.PRG
OVERSCAN.PRG
AUTOTIME.PRG

Obviously the content of individuals' auto folders varies greatly, and the trick is to experiment with different orders in the Auto folder and to remember to perform a hard reboot with the on/off switch between adjustment of the setup. Do allow 30 seconds or so between on and off's.

The major problem seemed to be with GDOS. If it was loaded after Overscan the things certainly didn't work and my ST kept on rebooting itself.

If your ST boots up with 'sort of horizontal' lines at a slight diagonal it probably means your auto folder needs rearranging. Look here first before taking your ST to bits again suspecting a hardware problem. If your ST boots up with plumes of smoke it probably isn't the order of the Auto folder.

When Overscan boots up hold the SHIFT key down if you wish to alter the picture size. Being fortunate enough to have a multisync monitor I can enjoy the full mono and colour resolutions of 732*480 and 840*284, although an SM124/5 won't quite reach the highest mono resolution.

I have also found, when in mono rez, the monitor displays a dim image on boot up in Overscan. This can be resolved by flicking the Overscan switch on off and on again quickly; don't ask me why, though.

Overscan works OK with the following:

- ✓ Wordwriter (old version 2, I don't know about later versions)
- ✓ Neodesk 3 (lets you create new .INF files for the extra resolutions!)
- ✓ Public Painter (DRG19 from ST Club)
- ✓ Redacteur 3 demo (brill!!)
- ✓ Datamanager ST v1.0

Overscan has problems with the following:

- ✘ Calamus demo version (loads OK but trash appears over the LHS. DOC on disk says it works OK, perhaps only the demo version has probs).
- ✘ Autoroute demo version (All works OK except bombs out when you exit)
- ✘ Easytext demo version (Definite no no)
- ✘ Cadja (Another no no)

I'm sure many other programs work with Overscan - experiment and find out. Don't worry if your favorite software has problems with Overscan as a flick of the switch and a reboot turns your ST back to what it was before with the hardware mod invisible and the Overscan software automatically disabled. I haven't found any software which refuses to work with the Overscan software disabled!

To sum up, I think anyone with a couple of spare quids, an afternoon and the ability to solder should have a go at Overscan. Medium resolution especially is unbelievable.

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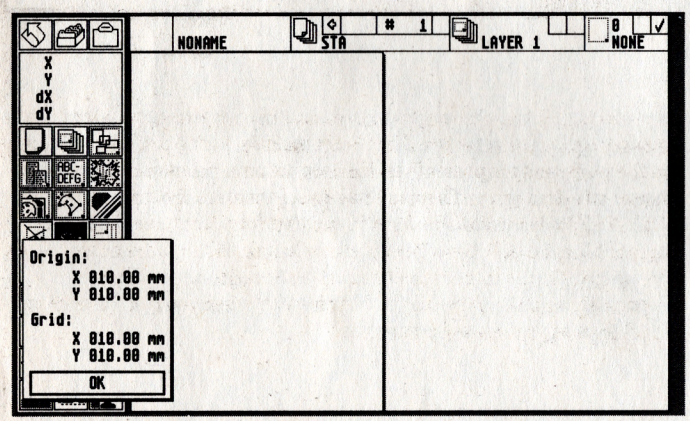
Working with DIDOT Professional

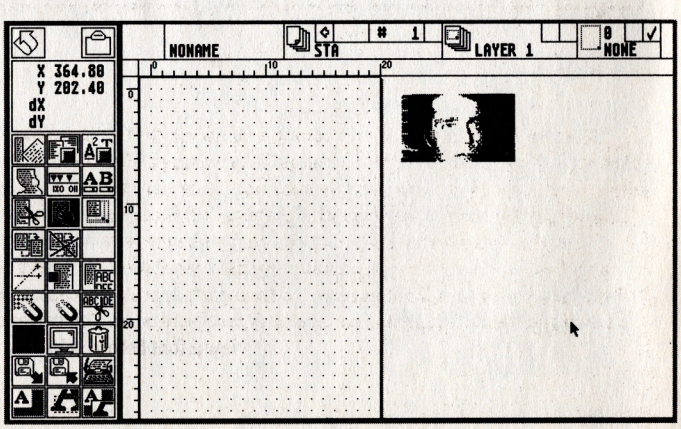
Departing from the usual reviews format, Günter Minnerup shares a "hands-on" experience with the idiosyncratic but powerful and elegant page design package.

Both Calamus SL and Didot Professional, the new heavyweights on the Atari DTP scene, have been introduced and compared in broad outline in these pages recently. There has also been no shortage of the usual broad-brush reviews in the various glossy magazines, but what such reviews cannot give you is a real "hands-on" impression of what the packages described really feel like in actual use. This is what I am going to attempt to do in this article: rather than attempt to cover all aspects of the program, I shall take you step-by-step through the process of creating a page of text and graphics with Didot Professional.

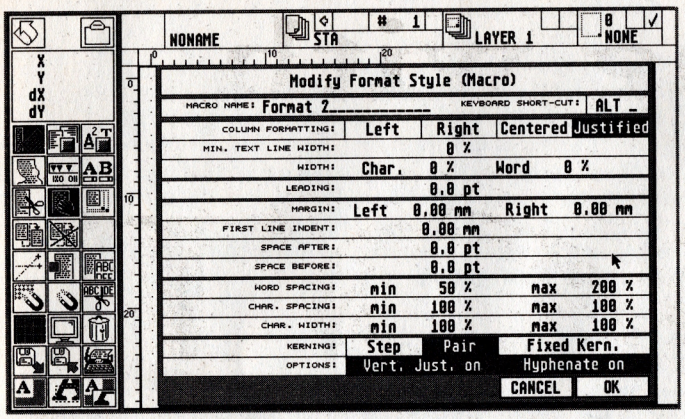
The job in hand is the layout of the Sticks and Stones column in last month's magazine, complete with a vector graphics logo and - why not? - a picture of the author. The only other software used was Protext to write the actual text, and Didot's sister program Retouche Professional CD to edit the scanned photo, mainly by increasing brightness and contrast and reducing the 256 grey levels to 16, the maximum that can be reproduced on a laser printer.



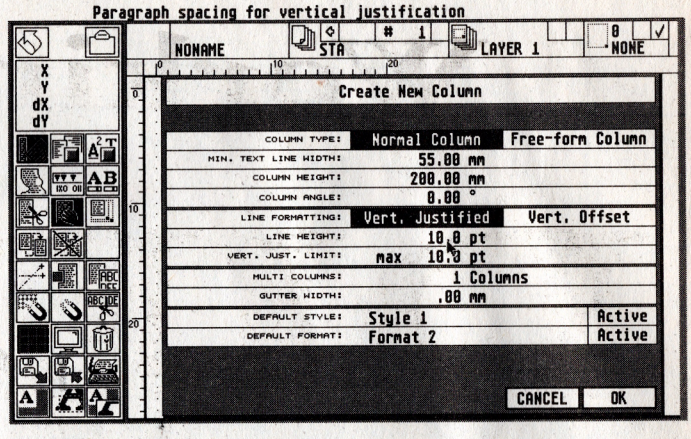
Having defined a standard A4 page size, a grid is placed on the blank page to aid in the positioning and alignment of the design elements. Didot offers maximum flexibility here, especially the ability to choose the origin - the top left starting point - of the grid. Since we are going to work in metric measurements, 10mm grid units are the obvious choice, but traditionalists accustomed to picas will be disappointed to learn that the current version offers no alternative to millimetres anyway. This, I am told, will be rectified with the next upgrade.



The scanned photograph - in Retouche .TIH format, which is a variation of the industry-standard TIFF - can be imported right away and left off the page in the work area until it is actually needed. The same could be done with text columns, vector graphics, and indeed other pages which do not even need to be of the same size or orientation: Didot's working area acts as a kind of pasteboard or light table, allowing you to freely experiment with various arrangements before committing yourself to a particular solution. As the entire contents of the working area are saved to disk when quitting the program you can later return to exactly the same pasteboard clutter after a break.

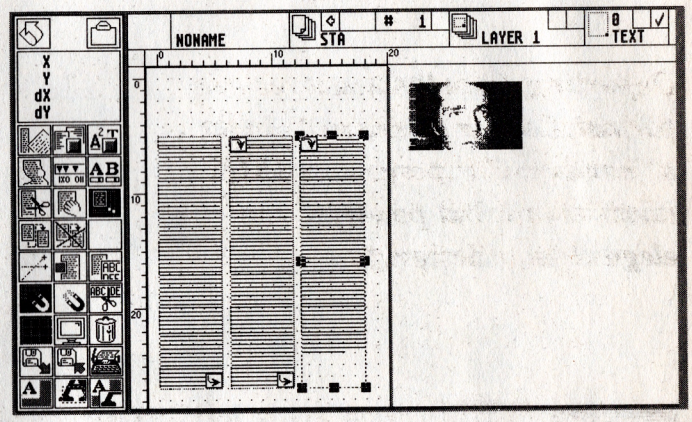


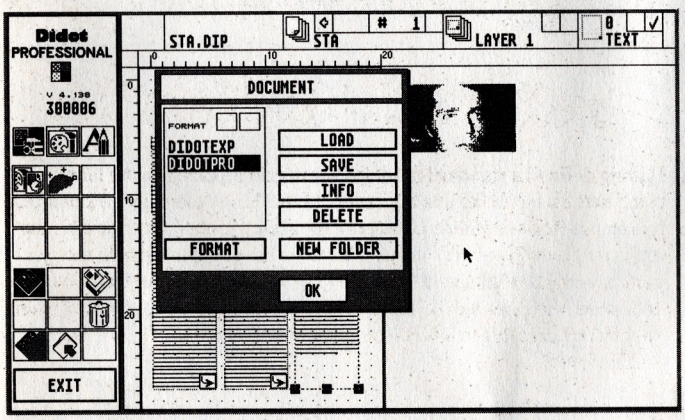
Paragraph spacing for vertical justification



To create text columns, a succession of dialog boxes has to be negotiated to define the default text style and column format. Unfortunately, the manual is rather vague and confusing on the precise meaning of many of the settings, so a certain amount of trial-and-error is needed to establish their effects. As soon as text columns are placed on the page, they fill up with dummy text - Didot does not know about empty text frames in the conventional sense, and this takes some time getting used to if you have previously used frame-based programs such as Timeworks DTP or Fleet Street Publisher.

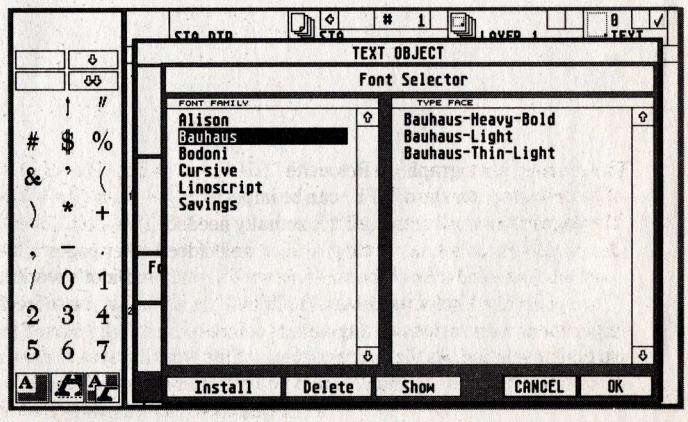
At small point sizes and coarse screen magnifications, column text is "greeked" in order to speed up screen redraws even further. Didot is far and away the fastest piece of DTP software I have ever come across - even on an ordinary Mega ST, as used to prepare this article, you get that turbocharged TT feeling. Fine adjustments to the column sizes and positions can always be made at a later stage, using magnetised guides if the grid lines are not sufficiently flexible. Do not forget that there is no need to place finished columns onto the page at all at this stage - you could also dump a long "galley" onto the workspace and cut and paste it later.

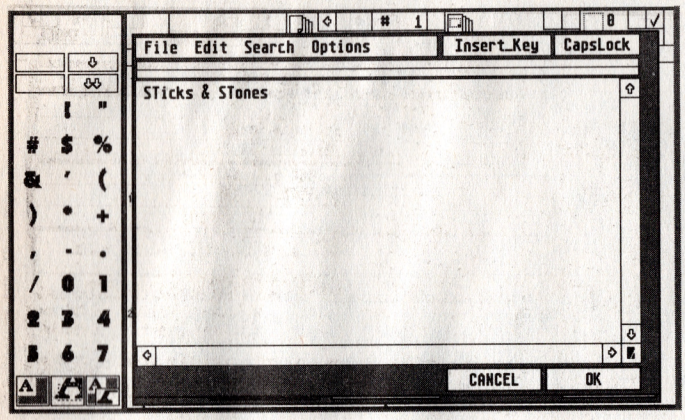




At this stage, it is perhaps advisable to save our work so far to guard against unforeseen crashes. Didot is not the most stable piece of software in the world and the present version does not have an autosave feature, so better safe than sorry. There are two data formats to choose from: DIDOTEXP files include the fonts in encoded form for the benefits of output bureaus, but cannot be edited any longer. Pictures are never included in the actual document as such and need to be available separately on disk - something to bear in mind when you plan to send your work to be output on another system.

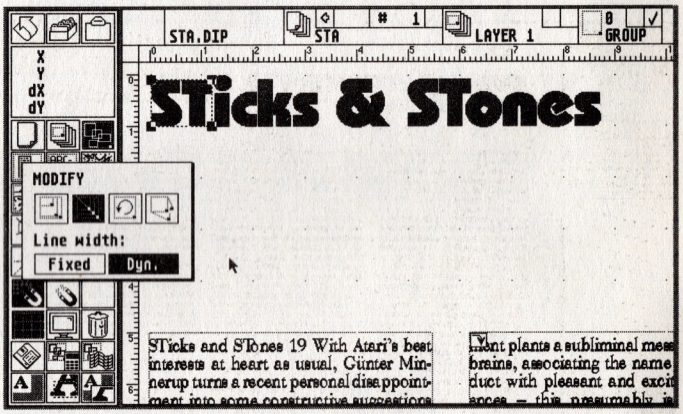
The heading or logo will be a vector text object in the Bauhaus font - a PostScript Type 1 converted to Calamus format using Didot's built-in font editor. This conversion is not, strictly speaking, necessary as Didot can use PostScript fonts directly alongside Calamus CFN fonts, converting both into its own internal DFN format. I really like the way the program handles font libraries: you can have any number of these on your hard disk, keeping the font families required for a particular job in a library of its own and then selecting the particular typestyle needed. You can even view a font before selecting it.

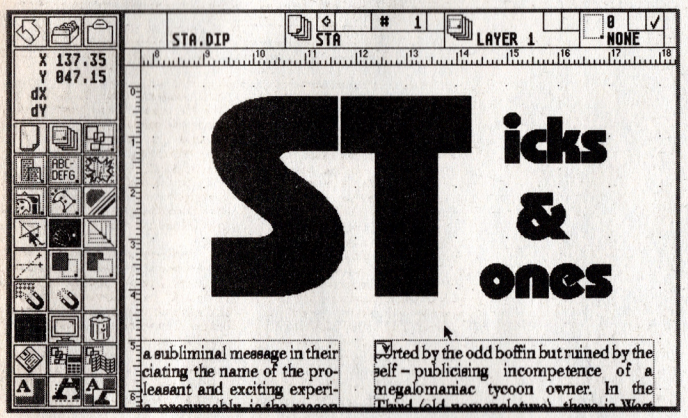




To begin with, the vector text object consisted merely of the two letters "ST", so we go into the text editor to add the full Sticks and Stones heading. This same editor is, of course, also available for ordinary body text although I prefer to avoid using it as much as possible since it is usually quicker to carry out minor modifications directly on the text column. The character selector is useful for those special typographical niceties that are not easily accessible from the keyboard, such as proper quotes, m-dashes and symbols.

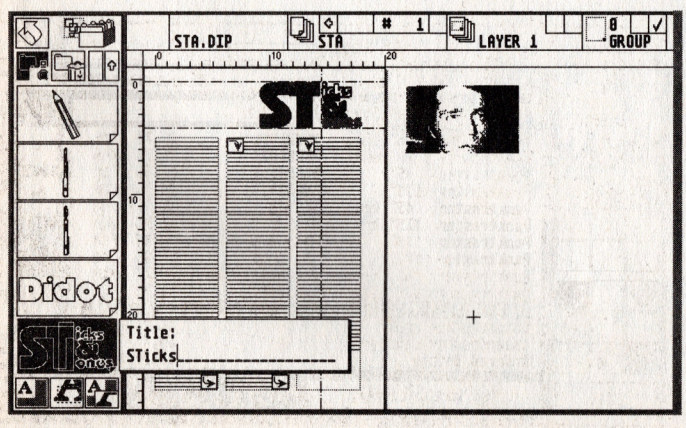
Text objects start life as grouped vector graphics, but to modify their individual parts we need to ungroup them. Here the S and T have been grouped together again to be proportionately scaled up. The second ST in "Stones" will be deleted and the entire heading drastically re-arranged.





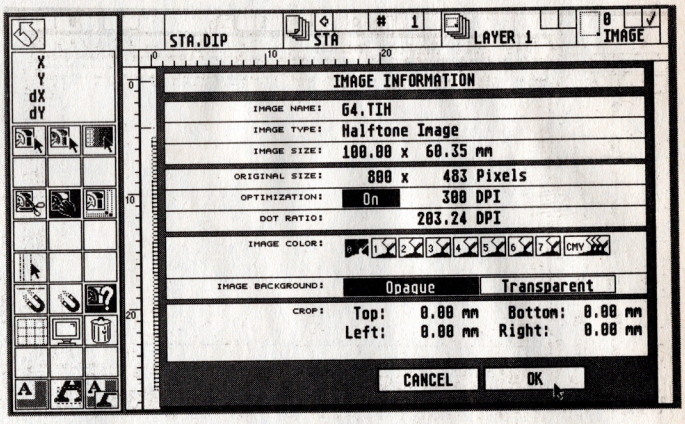
This is roughly how we want it, but of course only roughly. The beauty of Didot is that it lets you fiddle about with the ingredients to your heart's content with the minimum of restrictions, permitting quick and intuitive changes in magnification by using the right mouse button. Precision can always be attended to later, when you know what exactly it is that you want.

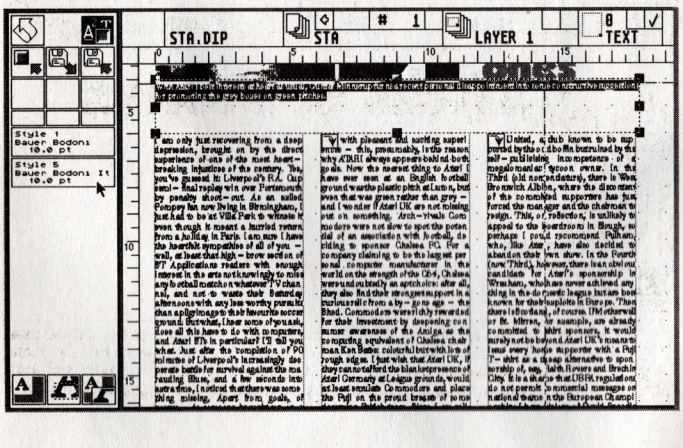
Having added some magnetised guides for precision alignment, we can now add some variety by assigning different grey fills to the character paths - which need to be ungrouped again for this operation - and thickening their outlines. Colours are also available, but to view them on screen you need a second monitor as well as an appropriate colour graphics card.



The finished logo can now be grouped together and copied, for future re-use, to Didot's disk-based objects library. Such libraries are provided for every type of object, from entire pages to columns to graphics, and once you have grown accustomed to using them you really appreciate how indispensable they are to keeping maintaining your working environment in a structured and accessible state. For short-term storage during one session or for use in the current document only, Didot also provides object clipboards.

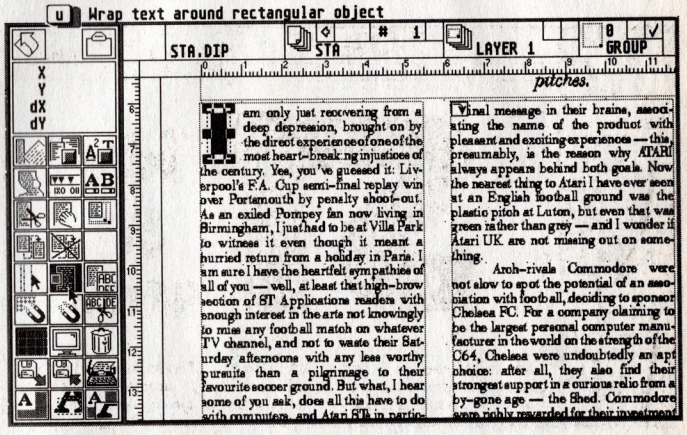
Now let's put the scanned photo on the page: the various settings in the picture information dialog are of no immediate interest to us except for the need to switch on picture optimisation for 300dpi laser output to avoid unsightly moiré patterns at unsuitable magnification ratios.





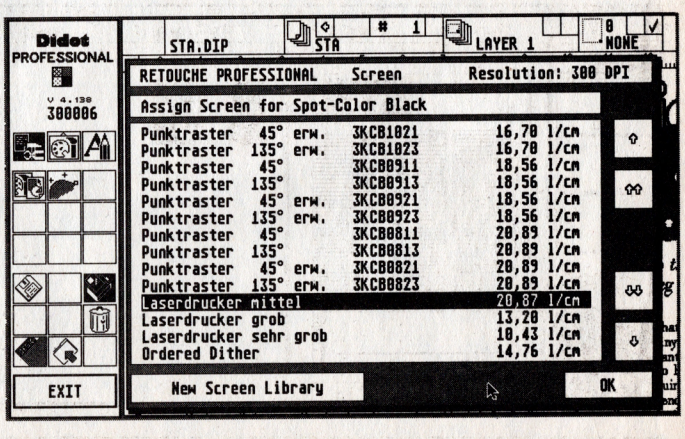
Using the text editor's cut-and-paste function, we have copied the introduction to a new text column but we also need to define a new text style macro as the introduction is to be set in italics, at a larger point size and a different justification (the latter requiring a new column format macro). This is a fairly tedious process compared to the direct style modifications possible in word processors and some DTP programs such as Fleet Street Publisher, but once you have defined the macros quick global changes can be effected with great ease and elegance.

Drop caps are best created by using the text flow around objects function: the capital I was set as a text object, scaled proportionately to the required size, and the body text then told to flow around it. Irregular flows are best achieved by converting the text column to a freeform column which can be stretched and distorted into any shape you require.



The finished page in its full glory, ready to be output to the printer or exported in a variety of file formats for processing by a bureau or further work in a different software package. Didot Professional offers a variety of output drivers, including a very flexible PostScript option which can even convert Calamus fonts into PostScript Type 3 fonts. For high-speed and quality work, the direct route to Didot's own ImageSpeeder interface connected to a Hell imagesetter is the professional option, although way beyond the budget of the average Atari amateur.

Whatever output driver you choose, it is important to screen the halftone images on your page correctly for the intended output device and resolution. Didot makes use of the excellent raster screens provided by its sister program Retouche Professional CD, with a choice of many different angles and frequencies which you can assign to each colour. For monochrome laser output, the "Laser Medium" screen assigned to black is the obvious choice.



Redacteur3

The first version of Rédacteur became the standard word processor for the ST in France. For journalists working for the newspapers *Libération*, *Oeust-France* and *La Voix du Nord* it has become an indispensable tool. Its speed and features have attracted thousands of users.

The latest version of Rédacteur, version 3, has retained the speed of the original version and added a greater degree of flexibility, and many more functions and facilities:

- ❑ Multiple rulers, paragraph styles and page layouts;
- ❑ Choice of character height/width and line spacing;
- ❑ Footnotes and endnotes;
- ❑ Automatic creation of tables;
- ❑ Graphics handling (16 formats recognized);
- ❑ Programmable macros
- ❑ Built in switcher for toggling between programs;
- ❑ Font Editor and Editor for mathematical formulae;
- ❑ English and French spell checking plus Verb conjugation;
- ❑ Editor for user-defined dictionaries;
- ❑ Automatic Hyphenation;
- ❑ Option to save text files in compressed format;
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- ❑ Full configurability of most functions;
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Runs on any Atari ST(E), Mega ST(E) or TT with at least one megabyte of memory. Colour or monochrome display.

Excellence in word processing for just £119

Soft Acceleration

Software to Speed the ST

Some aspects of the ST's operation can be infuriatingly slow. There are few users who have not experienced the frustrations of waiting whilst the screen redraws or the disk drives slowly grind yet again. In this article Douglas Drummond considers some software designed to help banish the busy bee for ever.

MOST programs that run on the ST use the operating system (TOS and GEM) to provide common functions such as writing to screen and disk. The software described in this article provides alternatives to the standard operating system calls, and has been optimised to execute as quickly as possible. As these functions are called frequently by any TOS or GEM program the overall operation of the ST can be accelerated. The software covers three of the slowest parts of the ST's operation: screen redraws, disk access and printer output.

Screen Accelerators

Software-based screen acceleration is dominated by the programs Turbo ST and Quick ST 3.0. Both are distributed as commercial programs and both aim to provide routines for screen output that are the most efficient possible. After auto installation during bootup both use desk accessories for control of the program. To test the efficiency of the programs the benchmarking program Quick Index, which is supplied with Quick ST, was used (fig 1). Both programs speeded up all the screen functions tested compared to the standard STE configuration (with blitter on). In fact both programs produced enough improvement in the screen speed that running the benchmark was not even necessary to confirm that they were having some effect. For once the titles "turbo" and "quick" actually seem modest. Quick ST 3.0 was marginally faster in most tests; however, in practice, there is not really any perceptible difference between the two programs. Quick ST 3.0 provides other features, such as customising the desktop by using a different desktop pattern and font. It also has rodent control to prevent menus dropping, but lets the mouse wrap round the screen. This coupled with its lower price makes Quick ST 3.0 the better choice.

If your ST lacks a blitter chip it is worth considering that both Turbo ST and Quick ST 3.0 running without the blitter chip are still faster than the standard STE with blitter on. In fact with the accelerators running, the blitter chip only gives an improvement of about 20% in the drawing of GEM dialogue boxes.

A few public domain programs exist which concentrate on a single aspect of screen output. No Zoom saves time as it turns off the multiple redraws of GEM dialogue boxes as they expand to full size. This halves the time required for each dialogue box opened. Scroll targets the scroll function. This gave no measurable improvement in performance compared to the standard STE. To be fair none of the commercial programs managed more than a few percent increase in scroll speed either. All the programs would give improved scrolling with older or non blitter versions of TOS (about twice as fast as TOS 1.0).

Disk Accelerators

The main delays in reading or writing to either floppy or hard disks are caused by the mechanical mechanism of the disk drive. This can be shown by comparing the performance of a RAM disk which usually works at least 10,000x faster than a floppy disk. The advantage of a RAM disk is its speed. The disadvantages are the memory occupied by the disk and the vulnerability of the data to power cuts and other mishaps. There is simply no way to avoid using real disk drives; however, there are methods to speed up the process.

The first uses disks with a non-standard format to overcome the slow steps in reading the data from the disk. These delays are mainly caused by the time taken for the drive head to physically move across the disk together with allowing time for the drive head to "settle" after each move before it starts reading data. Double-click produced a PD fast format program that speeded up the process by fooling the software into thinking the delay was unnecessary so it would start reading

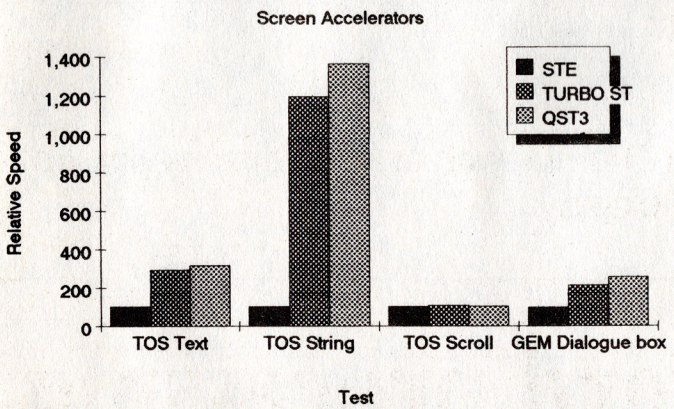


Fig. 1 Screen acceleration tests

Tests were run using Quick index. TOS text is speed of outputing a single character, TOS string the speed of string output, TOS scroll the time taken for a line of text to scroll up the screen and GEM dialogue box the time to open and close a standard GEM box. Speeds are expressed relative to a standard STE at 100. A 4Mb STE with blitter on and a high resolution monochrome screen was used.

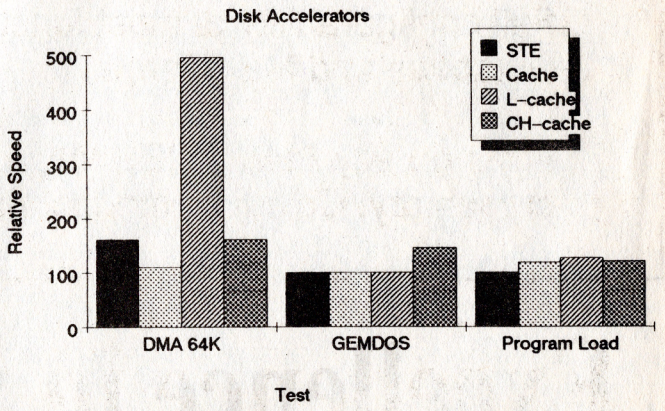


Fig. 2 Disk acceleration tests

The Quick Index test DMA 64K is the time taken for direct reading and writing of disk sectors. GEMDOS is the time to create a new file. Program load is the time taken for two consecutive loads of the program Hyperdraw plus 25 associated GDOS font files. Speeds are expressed relative to a standard STE with twin floppies.

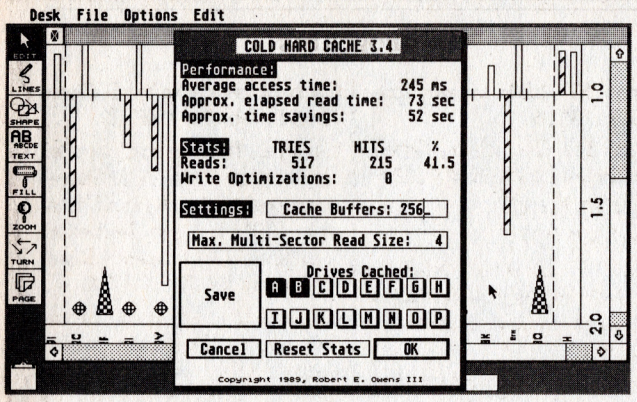


Fig. 3 Cache statistics

CH-cache provides a desk accessory to check on cache performance and help optimise the cache size.

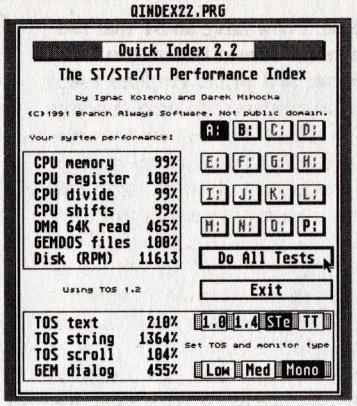


Fig 4 The ultimate in STE performance

Quick Index statistics on an STE running Quick ST 3.0 and L-cache.

data at once. This is of questionable reliability. Fastflop has a more secure approach as it uses software that gives the head sufficient time to settle but still reduces the delay before the data is read. This also requires an untwisted format disk (such as TOS 1.0 produced). With earlier versions of TOS Fastflop produced an effective increase in speed. More recent versions of TOS have improved disk routines so that on the STE Fastflop is actually slower than the standard desktop formatted disk.

The alternative and more effective technique for recent versions of TOS are disk caches (fig 2). Like all caches these attempt to replace the slow storage on disk with fast access storage in RAM. Lack of available RAM usually prevents the whole disk being cached in RAM as soon as it is accessed. In any case this would be wasteful as time would be spent loading unwanted areas of the disk. The compromise is to set aside a small area of RAM and load it with the most recently accessed parts of the disk. Then if the program requires the same data again it can be read from memory rather from disk. There are clearly problems in ensuring the cache contains data that is wanted. Optimising the size of the cache is a compromise between memory use and cache performance. Writing to the disk can also be improved by a cache, although this is slightly trickier. To avoid any loss of data the cache programs should write instantly to disk. The speed improvement is achieved because before writing to disk the cache program first checks if the data is in the cache. It then checks if the data has changed and only writes the data blocks that have actually changed to the disk.

The programmes Cache, L-cache and Cold Hard Cache were all chosen as they work with both floppies and hard disks, and all are compatible with the STE. CH-cache and L-cache have full GEM interface programs for configuring the caches. Cache is TOS only which makes it harder to use from the desktop and less flexible if it is installed as an auto folder program as only the default settings can be used. It is really designed for use with a shell and for anyone devoted to the command line is the better choice.

It is difficult to accurately compare the performance of the caches as this is very dependent on the number and type of accesses to disk made by particular programs. Quick Index measures the speed of reading and writing data directly to the disk, plus the time taken to create a new file. It is interesting that the STE with no cache fitted registered 161% for DMA compared to the STE standard used by Quick Index. It is unclear if this is due to a fault in Quick Index or to an improvement in the STE. The result of this was that Cache performed more slowly than the basic STE for data transfer. CH-cache gave comparable performance to the basic STE, with only L-cache having a significantly improved performance. For file creation only CH-cache improved on the basic STE. As a more realistic test of the actual time savings that might be achieved the time taken for the program Hyperdraw and its associated GDOS fonts was measured. The basic STE took 64 seconds. All the caches were faster than this with L-cache only requiring 50 seconds. The effect of the cache is perhaps less immediate than with the screen accelerators; however, the time savings quickly add up, particularly if the cache is optimised for the particular program. Both Cache and CH-cache provide programs to measure the statistics of cache operation (fig 3). These measure the hit rate or number of times that data required by a program is found in the cache rather than having to be read from the actual disk. CH-cache has a further refinement which limits the data that is placed in the cache to blocks smaller than a given size. This prevents long data reads such as when a program is loaded from flushing smaller items from the cache. The small items are usually the more frequently needed data on the disk such as directories and file allocation tables.

The final method for reducing the time to load data from disk is to reduce the amount of data loaded. This is used by the program Font Expander which is supplied as part of Fontkit. It allows GDOS fonts stored in a compressed format on disk to be loaded and decompressed for use by any GDOS program. The compression is very efficient achieving compression ratios of up to 1:7 for the largest font sizes. The saving in disk loading time is greater than the time required by the program to decompress the font.

Printer Output

The slow speed of printer output is, for once, not entirely the fault of the ST. The main problem is the slow speed of most printers particularly when printing graphics. This means the ST must pause idle, waiting on the printer finishing printing before it can send the next block of print data. I use a Cannon Bubble Jet printer together with the GDOS driver by Working Title. In 360dpi mode this combination can take 16 minutes to print a GEM file from Hyperdraw. Print buffers or spoolers speed up this operation by storing the print data from the program in an area of memory. The computer is then freed to get on with the next task, which is either calculating some more graphics data or running an entirely different program. The print

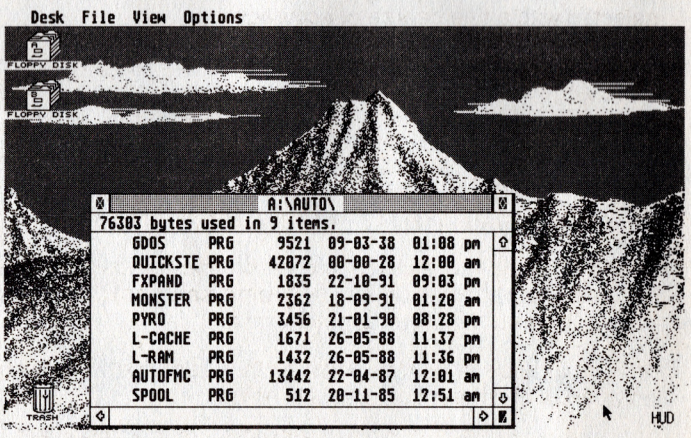


Fig. 5 Auto folder order

Incompatibility can be cured by having the correct order of programs in the auto folder. The only problem is finding the correct order with so many programs fitted. This order works with the programs GDOS, Quick STE, FXPAND (font expander), Monster (large virtual screen supplied with Quick ST), Pyro (screen saver), L-cache, L-RAM (RAM disK), AUTOFMC (Forget-Me-Clock II auto set program), Spool. The decorative desktop is another of the Quick ST features.

spooler continues printing as a background operation by occasionally interrupting the main program to send some more data to the printer. The printer of course carries on at its own slow speed, but the main computer is free to get on with something else. Most word processing packages use a print spooler to allow background printing of one file whilst another is being edited. For other programs and for printing files from the desktop a standalone print buffer is required. Of the print buffer programs I tested, only 'Spool by' successfully printed the GEM file without crashing like the program 'Barrel', or corrupting the output as happened with 'RAMbaby'. Spool succeeded in halving the printing time to 8 min.

Summary

I was pleasantly surprised by just how much improvement in speed could be achieved by software alone. I now have an ST that redraws the screen faster than I can follow, and prints graphics twice as fast and has reduced disk access times (fig 4). So what are the draw backs? With such a large number of programs which all hook into the operating system incompatibility is a potential problem. If this does arise it can sometimes be cured by resaving the programs in a different order to a new autofolder which changes their order of execution on boot up (fig.5). A second consideration is memory. As all the programs are, of necessity, memory resident this could be significant on a 512K or even a 1Mb machine. The largest program is Quick ST at 42K, but the disk caches and print spoolers all require additional memory for the buffer. If I were limited to just one of the programs, I would opt for a screen accelerator as this is the most frequently used function and has the most obvious effect on the ST's performance.

Programs

Turbo ST 1.84: screen accelerator. £34.95.
Hisoft, The Old School, Greenfield, Bedford, MK45 5DE, UK.
Tel: 0525 718181
Fax: 0525 713716

Quick ST 3.0: screen accelerator, includes desktop customiser and large screen emulator for ST. £12.95.
The ST Club, 2 Broadway, Nottingham, NG1 1PS, UK.
Tel: 0602 410241; Fax: 241515

Nozoom: turns off GEM zoom boxes. PD: ST Club disk TMP.11.

Scroll: scroll speeder by LJM de Wit. PD: ST Club disk TMP.11.

Fastflop: Uses untwisted disk format and special read software to speed read and writes to floppy disk. By B. Flint. PD: ST Club disk TMP.11.

Cache: Disk cache by E. Gisen. PD: ST Club disk TMP.11

L-cache: Disk cache, includes reset proof RAM disk. Shareware registration $15; ST Club disk TMP.11. Keith Ledbetter, L-utilities, 2303 Arrowood Road, Midlothian, VA 23112, USA.

CH-cache: (cold hard cache) disk cache. Shareware registration $15. ST Club disk TMP.11. Robert E. Owens, 34 Pinecrest Dr., Covington, LA 70433, USA.

RAMbaby: RAM disk and print spooler. PD: ST Club disk TMP.11.

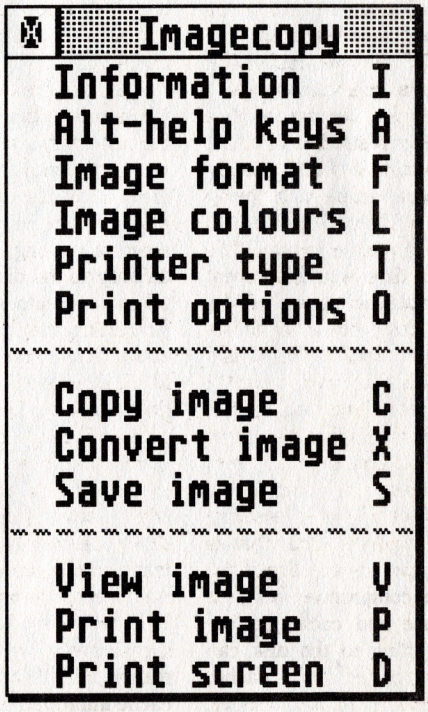
Barrel: Flexible print spooler that also allows capture of print output to files. By M. Braner. PD: ST Club disk TMP.11.

Spool: print spooler by S. Rollins. PD: ST Club disk TMP.11.

Imagecopy

- Copy images from screen and save them in IMG, Degas or RSC format. Images may be copied by pressing Alternate-Help, allowing you to capture images when the Accessory menu is not available.
- Flexible rubber-banding system which allows images to be selected with a fine degree of accuracy.
- Copies images from both standard and large screens (including virtual large screens such as MonSTer) in any of the normal ST/TT resolutions except TT low resolution.
- Convert images to different formats. Imagecopy reads images in IMG, Degas, NEOchrome, Art Director, and Tiny format, and writes images in IMG or Degas format.
- View images on a monochrome or colour monitor (colour images are dithered on monochrome screens). Up to four images may be displayed simultaneously.
- Print images and screen dumps in a variety of resolutions on a range of different printers, including:
  - 9-pin or 24-pin Epson-compatible dot-matrix printers
  - Bubblejet printers (with IBM or Epson emulation)
  - Deskjet and Laserjet printers
- Print speed is much faster than normal GDOS output.

Imagecopy is supplied as a desk accessory and as a standalone program. A fully illustrated manual is included.



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Going On-Line

MaxiMiser v2 Update

Mark Baines tries out the new version of the MaxiMiser off-line reader and ends up being disappointed.

Shawn Smith in Canada has been long promising this new GEMmed version of MaxiMiser (see Issue 15) and spent some time beta testing it locally before its release. The present version is 2.09b although I tested v2.09a which contains many bugs supposedly eliminated in 2.09b.

The concessions to GEM are few although I am aware that some like it like that. BBS Bulletins, Notices and New Files lists are displayed in windows and there are home-grown, non-GEM boxes to click on for certain options. There is a GEM menu bar to select the options on the main screen and a separate one for the editor. However, most of the important screens are the same non-GEM affairs as version 1 - Read Messages, Message Management, Quote Text screens, etc. I found this a strange mixture and was uncomfortable with it. MaxiMiser v2 appears mostly to be a slight rewrite of the non-GEM first version with some GEM bits stuck on, and it shows.

Options

The configuration program is still external (for memory reasons) and can be called from within the main program, except that any of the calls to external programs (Text Editor and DOS Shell) on my set-up refused to work. The calls to GEM objects are seriously bugged in the configuration program where exiting is a real problem! There is the option of having a 8x8 font which is useful and an IBM (ANSI) font which, as a medium resolution font, looks very poor in high resolution. An interesting feature is the Twit List, a facility to allow MaxiMiser to ignore messages from the people on your list. With the U.S. comms scene often full of flames and hostility, I could see a use for this!

There are the usual message creation, reading and manipulation options from version 1 which are similar to those in MTQWK (see Issue 18). The 'Quick Scan' list works in a very similar manner to that in MTQWK and so does the 'Read Messages' option. However, when the message is displayed on screen the appearance is exactly that of MaxiMiser version 1 with no GEM or other GUI facilities except that a mouse click makes the next message appear, as it did in version 1. At the bottom of each message are the options for Quit, Reply, Next, Previous, etc., which are only selected with key presses. It would have been better to give the user the option of clicking on these options, his/her hand perhaps being on the mouse anyway. An additional and welcome feature is the 'Thread' option which looks at the current message subject line and displays all those messages with the same text. This enables you to follow a particular conversation providing someone didn't change the nature of the subject field at any time. The Text Search facility works well and highlights the string when found.

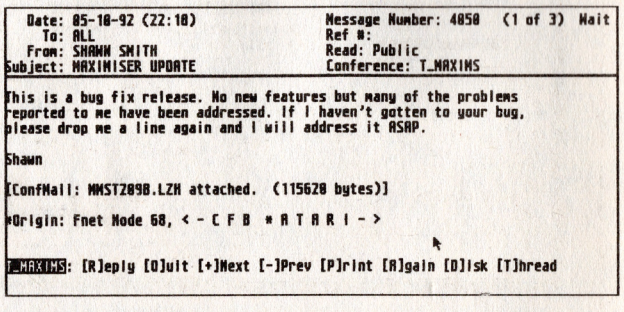
Replying to a message or entering one from scratch takes you to a separate editor screen, the menu bar again being the only GEM feature. Apart from a quirky mouse, this works reasonably well except that quoting from the message you are replying to works in the same way as version 1 and is nowhere as user-friendly and convenient as MTQWK. The block commands are extremely buggy and after much pain and anguish and loss of text I have given up on using them. A Reformat feature is welcome but doesn't help and a single page marker and text alignment control are worthwhile extras. Text from external sources can be merged into your message, an essential feature.

The management of your own messages has always been one of MaxiMiser's better features. You can read one message after another without having to resort to re-saving it each time as in MTQWK. However, deletion of messages is still not done at source - with the consequent waste of on-line time - sending messages only to have them deleted by the BBS once received.

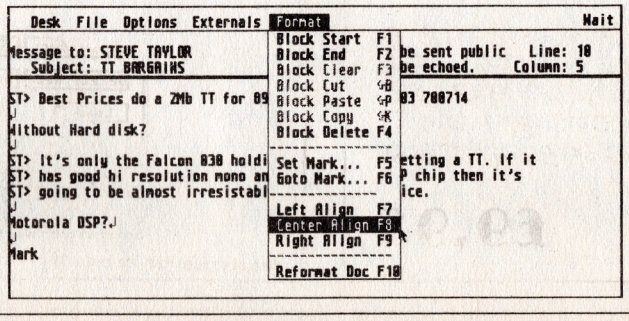
MaxiMiser still uses Tag Lines to finish off each message, and this appears to be causing more worry as some networks don't like their presence. There is some scope here for configuration. Registration of MaxiMiser is not available in this country any more owing to an unpleasant misunderstanding - not of the U.K. distributor's doing, I hasten to add. Although Shawn is looking into the matter of U.K. registration and distribution of MaxiMiser, at the moment your C$18 (Canadian dollars) must go to Canada. Those that have already registered can continue to use their old MaxiMiser Keys.

Update

The current version of MTQWK is now 1.08a and looking better every time. Look out for a new version of FzDT (now at v2.12) - the best comms terminal for the ST/TT - this summer. It is reported to have all its transfer protocols internally installed and many new and exciting features. Also, the ST BBS network is getting a shake-up with the conversion of most European FNet BBs to TurboNet with new features and a greater consistency across nodes. An interesting time to be involved in ST comms.



Reading a message, showing the available options at the bottom.



Making a reply, with quoted text shown and some of the format options.

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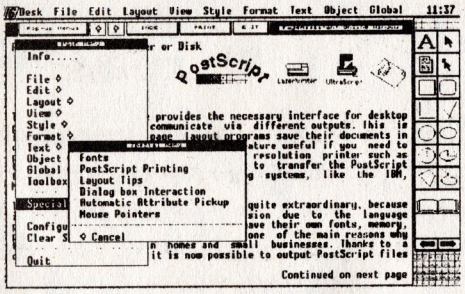

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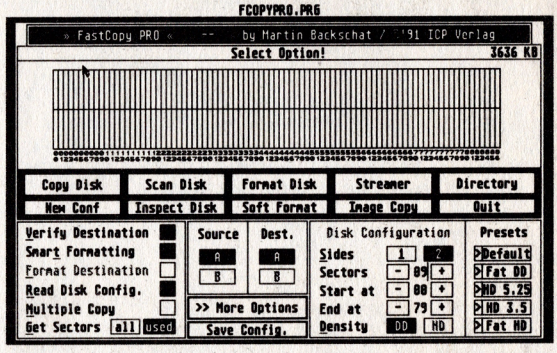
New

FastCopy Professional

Lightning fast copy program and disk utility



The latest version of the number one ST disk duplicating software takes the concepts and features of FastCopy 3 and pushes them to the limits.

Features include:

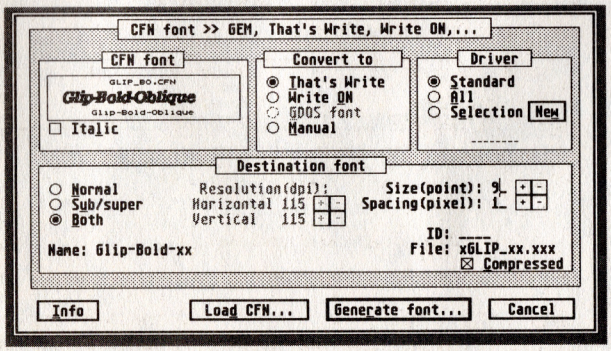
- Copy disks: Only formats when required, Only reads those parts of a disk that contain data, Full verification, Intelligent handling of read/write errors.
- Format disks: Format up to 86 tracks and 11 sectors per track; MS DOS compatible disks.
- Save default settings.
- Pre-configure up to 5 default sets of parameters.
- Convert a disk into a file for archiving and comms applications.
- Fast hard disk backup with data-compression.
- Fully fledged disk editor built-in.
- Virus Detector, Killer and Immunisation.
- Support for High Density 3.5" and 5.25" drives.
- Works at 8MHz, 16MHz or 32MHz on ST, STE and TT.

Supplied with a ring-bound manual, FastCopy PRO' is the ultimate disk tool for all ST users.
FastCopy PRO is copyrighted and --not-- PD!

£24.95

See our order form on page 57

C-Font



Converts outline fonts in .CFN file format to GEM bit-mapped fonts at various point sizes for That's Write, Write ON, Calligrapher, Redacteur 3, Timeworks Publisher 1 and 2, Fleet Street Publisher, and any application that uses GDOS fonts.

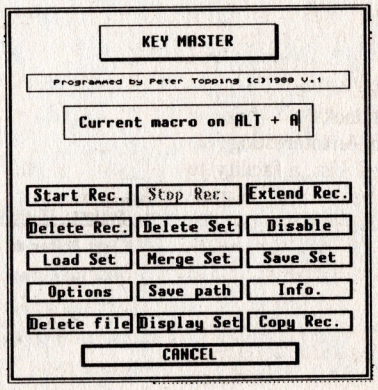
£9.95

See our order form on page 57

Key Master

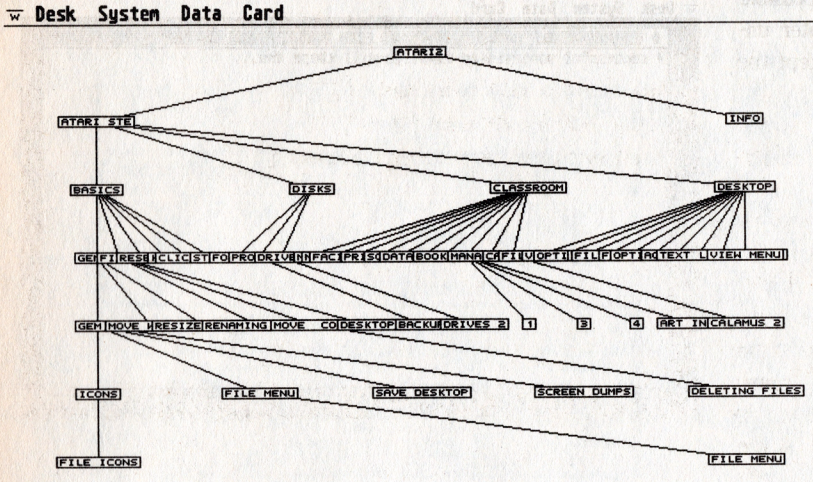
A macro accessory that allows sequences of keystrokes (up to 100 characters long) to be recorded and replayed as if the characters were being retyped. Each letter key A - Z can have it's own recording assigned to it; and this can be replayed by pressing the appropriate key whilst holding down the Alternate Key.

Key Master can be used with word processors, editors, compilers, interpreters, adventure games, communications packages and virtually any other ST program that allows use of the keyboard. A great time saver for those of us who have to constantly re-type the same phrases or commands.



£6.95

See our order form on page 57



As you can see, the system can become quite complex with even a fraction of the cards in use. Here, only about 50 cards, of a potential of 1600, have been written.

TCOS: A Wrongly-Classified Classification System?

Review by L.T. Freedman

Look in the catalogue of any PD library which stocks TCOS, and the chances are that you'll find it buried amongst the databases. I'm not so sure that it should be there: perhaps it ought to have a category of its own.

TCOS is, basically, a card index system. You type onto a card, or assign a graphic to a card, and each card can lead to several others.

A glance at the system tree shown above will give you some idea of how complex a "system" - which is how TCOS refers to its files - can become. In fact, you can have up to 1600 cards if you're using 2 meg of RAM with a hard drive, and over 850 cards with a 1 meg machine and no hard drive.

TCOS is a kind of hypertext system without the hype. It won't allow you to blaze your very own trail through a mound of documents, or to click on a picture of Beethoven and be treated to a rendition of the Fifth. But on the other hand, you won't need a PhD in order to understand the instructions, and you'll be able to produce a pretty good system within a very short time indeed.

Why should any clear-thinking person choose to use TCOS rather than a database, considering that in the latter the search facilities are much more sophisticated?

TCOS has a number of potential uses which make it more suitable in some circumstances than a database. In essence, TCOS is very text based, and this is precisely what you want when trying to gather a lot of information for a report or project of some kind. Also, being rather linear, it enables you to see very quickly how the different parts of the subject link up.

TCOS can be used for the following purposes:

1. A self-contained tutorial system. I used TCOS to write a tutorial for newcomers to the Atari. It enabled users to learn how to use the computer in a very practical way - certainly much more efficiently than a text only approach could have achieved.

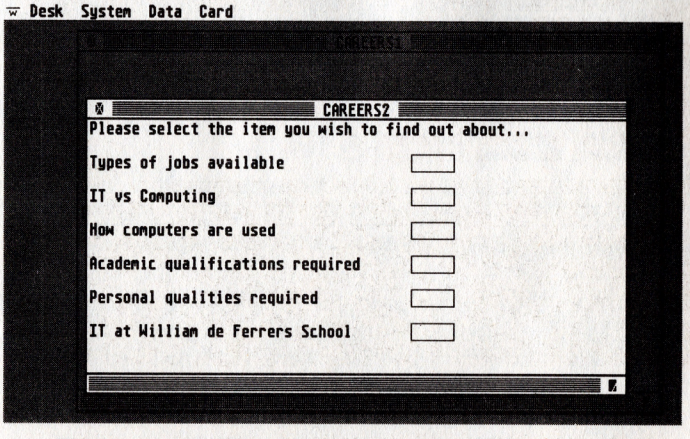
2. To present information. The careers system illustrated here allows the user to select cards from a range of options, such as what jobs are available in computing, and what you need in order to get them. An alternative way of presenting information is demonstrated in the AIDS system. In that, the user can click on a word within the text to obtain more information, or just carry on reading as normal. The AIDS system looks much more like a hypertext system in this respect.

3. As a programmed learning tool. As indicated in the Economics test, wrong answers could lead on to more info. In fact, if you have the time you can write a whole textbook like this!

4. As an expert system, e.g. What if the car won't start? or the printer won't work?

5. As a means of classifying information.

It's in this last category that TCOS becomes very useful indeed in the classroom. Unlike many databases, once you've decided on a way of classifying a set of data, you're stuck with it.



Used as a Careers Guidance program, TCOS enables schoolchildren to do some basic research without the teacher's help.

That means you have to plan it very carefully in advance, and ask yourself such questions as: "What would be the effect of classifying the information in a different way?"

TCOS is also useful in educational terms from the point of view that it forces you to classify items of information. In order to be able to do so, you require the ability to match objects and to distinguish between them - two very important skills which appear in more subtle guises as a child progresses through school. In fact, many schools in the UK which use Ataris do use TCOS.

TCOS is not purely text-based. If you have Degas format pictures you can convert them to a format recognised by TCOS, and can then assign them to cards. This assignment feature is a good idea: the card to which the picture is assigned doesn't contain the picture all the time. Instead, when you select a card containing the graphic, then and only then is the picture actually loaded (from disk).

A downside of the graphics handling facility is that although the graphics are converted to IMG files, I've yet to come across an application that actually recognises them as such! This makes it impossible to amend the graphics later unless, unlike me, you've kept the originals.

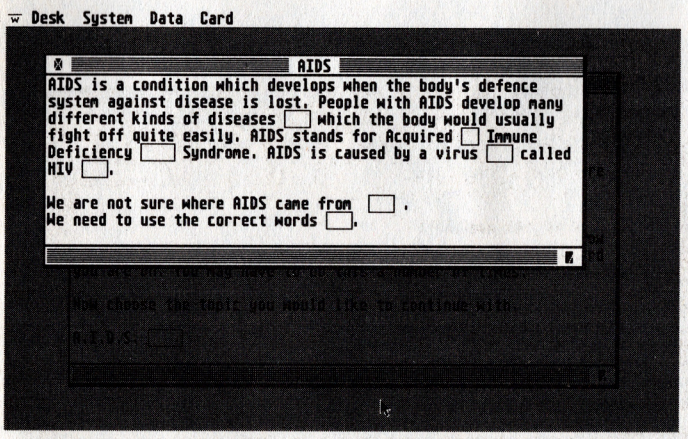
Another disadvantage is the fact that only Degas-format originals will do.

You can buy TCOS systems on a separate disk from the main program. These are fairly interesting and demonstrate some of the uses to which the program can be put. For example, there is one on time, in which you can discover all the things that can happen in different intervals of time, from milliseconds to billions of years. These were written by the author of the program.

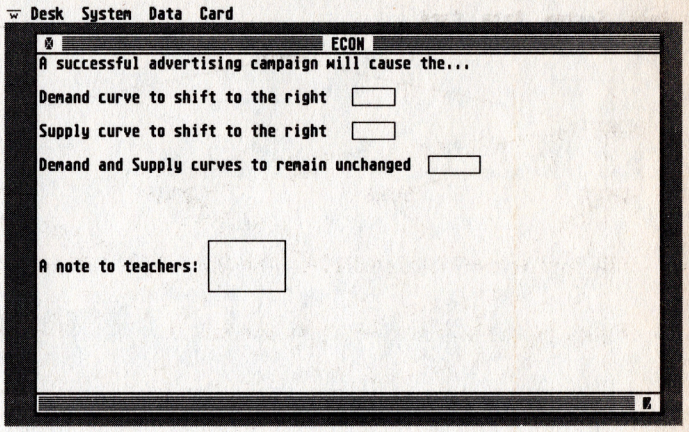
In addition, some programs in the Public Domain have utilised TCOS. The most notable example of this is the work of Jim Fanning, who has written a great deal of stuff for History teachers using TCOS and other easily accessible programs.

Despite all its good points, such as being very easy to use, versatile, and able to handle graphics (albeit in a limited form compared with true hypertext), there are a couple of annoying "features".

First, it doesn't have a printing facility. If it did, it would open up a whole range of possibilities, such as being able to generate revision cards for exam preparation and so on. You could always, I suppose, use a screen dumping utility to print the whole screen, but if you had a system consisting of 800 cards this could take some time!



In the case of this AIDS education system, the boxes are embedded in the text, making it almost like HyperText in some respects.



If you've got nothing to do, and plenty of time to do it in, how about making up a programmed learning course (or a test, or a trivia quiz...)?

Secondly, it has the annoying habit of hanging up on you if you try to draw a button (which you click on to get to the next card) too near the bottom of the card. It doesn't happen often, but when it does it's extremely aggravating. The best thing to do is to save the system after each new card has been added.

Thirdly, one of the facilities doesn't work - that of copying cards from one part of the system to another. That means that you can find yourself typing the same card (e.g. "This section ends here") over and over again. And you can't simply click on a card located in another branch of the system because you can only go up and down the system "tree", not across it.

Lastly, large programs take a long time to load - several minutes, even with a hard drive, so it's better to use several small systems than one gigantic one.

Nevertheless, if you stand back and look at TCOS, and the price it sells at, you can't get away from the fact that despite these niggly bits it represents extremely good value for money.

Points For:

- ✓ Easy to use
- ✓ Versatile
- ✓ Can handle graphics
- ✓ Educationally sound

Points Against:

- ✘ No print option
- ✘ "Copy card" facility doesn't work
- ✘ Large systems take a long time to load
- ✘ "Hangs up" in certain circumstances

Product:.....TCOS
Version:.....1
Supplier:.....PD Libraries
ST Club disk
TMP.11
Age range:.6? upwards
System:.....Medium or
Hi-res,
colour or
mono; all
Atari STs

RDE

The Ultimate RAM Disk?

RAM disks are useful little creatures which fool the ST into thinking that an additional physical disk is installed. The RAM disk, as its name suggests, uses the computer RAM and its size is therefore limited by the amount of available RAM. There are many RAM disk programs available; some are installed as TSRs (auto folder) while others are configured via a desk accessory. In addition, a RAM disk can be reset-proof: if your system crashes the RAM disk contents remain intact by some magic operating system trickery. RAM disks can be invaluable to software developers who can frequently crash the system while creating their program and therefore need to re-boot the system many times during a programming session. A RAM disk is blindingly fast when compared to a floppy and is even faster than a hard disk.

Review by Ofir Gal

My search for the ultimate RAM disk program was complete (for the time being) when I came across RDE. Programmed by Prof. Evans of Kent University, it is a modification of a Mark Williams program called RDY, which unlike RDE is not PD. RDE and its accompanying utilities offer some unique features that I have not seen in any other PD software.

RDE itself is a GEM menu driven program that will allow you to determine the size of the RAM disk (100k to 700k), its letter (C to H) and whether you want it to be the boot drive. The program will then generate a small executable file which you can name. Next, you will be asked if you want to load the disk. The answer depends on whether you have an STe or an older ST. Unfortunately, STFM users cannot load the file directly and will have to use a small program called CRD (included) to convert the file before it can be run on a pre-STe Atari. There is also a useful help facility to remind you of all the basic functions.

Either way, when loaded, the RAM disk can be used just like any other RAM disk. It is reset-proof, and if you defined it as a boot drive you can copy your floppy boot disk to it and re-boot. Booting the system now is as fast as it gets, especially if you have Pinhead installed. In addition, RDE will allow you to install as many RAM disks as you want, all of which can be loaded to memory, but only one can be a boot drive.

The great advantage RDE has over other RAM disks is that now you can load RDE again and save the RAM disk with its contents. The file created can be named and saved to disk. I have managed to squeeze HiSoft BASIC, WERCS and many other auto programs and accessories onto a three RAM disks configuration which uses about 1MB. The files generated were then packed with PFXPAK and copied to the auto folder of my (floppy) boot disk. The ST now behaves as if I had a hard disk with three partitions. After the initial floppy boot the system always boots from the RAM disk when reset, allowing me to make programming mistakes and to save as frequently as I wish. Saving is so quick that I now save every time I add or take out a program line. You must remember though to save to a 'real' disk before switching off. I can also change the configuration at any time and then save the RAM disks using RDE if I want to make the change permanent.

To make the best use of RDE you will need more than 1MB of RAM, but it is a real alternative to a hard disk and costs only a fraction: a 2MB upgrade for an STe is now less than £80. Who needs a hard disk?

RD Utilities

In addition to RDE and CRD, Evans has written RSDH, a mini-shell for RDE. It offers access to all RDE parameters via a command line and also allows creating disks with a faster 16 bit FAT as well as other optimizing functions. RSDH will also let you create more disks (C to P) and there is no limit on size.

Bugs

There is a slight problem which only appears if a RAM disk is over 95% or so full: any additional files are then corrupted when saved as an executable. Maybe Mr. Evans can solve this for us... Otherwise I have not found any bugs after over six months of daily use.

Conclusion

The best RAM disk utility I have encountered. My only complaint is the need to convert files to pre-STe format. The original RDY was STFM compatible, and although the source code (Mark Williams C) is in the public domain, the program is not. Highly recommended.

RDE and RD Utilities are available from the ST Club:

Disk TMP.11

The Chameleon v1.19

After reading a news item in a recent issue of Atari ST User, Adam Boocock wrote to a programmer in Germany, Karsten Isakovic, for a copy of one of his programs, The Chameleon. He received a disk containing a number of programs in addition to The Chameleon. This review is his impression of some of those programs, although it concentrates on The Chameleon.

It doesn't happen very often, but occasionally a program appears on the ST scene which could be of use to almost everyone. This is particularly gratifying considering that the program in question is available free!

There are countless useful Desk Accessories available, both commercially and also in the public domain. Unfortunately GEM imposes a limit of six DA's which must be selected at boot-up. Should you later find that the DA you require is not one of those six, the system needs to be re-booted in order to change those DA's.

Of course there are programs available that allow you to exceed the limit or to allow you to load DA's at any time. These programs, whilst of great value, do suffer from one major problem - they devour memory... In addition they are rather inflexible once you have selected your DA's. MultiDesk, for instance, will not normally allow you to un-load DA's unless you are working at the GEM Desktop.

The Chameleon goes a long way towards solving some of the problems described above. It is a Desk Accessory, loaded at boot-up, just like any other, which allows you to load and un-load other DA's in its place, at will - even from within other programs.

The Chameleon occupies just 5Kb of memory, and so it can be used happily by 520 owners.

In Use

All of The Chameleon's options are accessed by clicking on its Desk menu entry whilst holding down various combinations of Shift and Alternate keys.

Loading a DA is very simple - clicking on The Chameleon from the Desk menu (see fig.1) brings up the file selector showing all AC? files in the current directory (a default directory path can be set as we shall see). Double click on the required file and the DA is loaded and opened for use. Should you not wish the DA to be opened immediately, hold down the left Shift key during the selection process and the DA will be loaded but not run. The DA can now be used just as though it was loaded during the boot-up sequence.

The name of the DA (preceded by an arrow) will replace the entry for The Chameleon in the Desk menu (see fig.2). Incidentally, The Chameleon can cope with those DA's that occupy more than one menu slot by dividing the entry in two, with each half being individually selectable.

When you have finished with the DA, click on the relevant Desk menu entry whilst holding down the Shift and Alternate keys. (If you also hold down the right mouse button, you will be presented with the file selector to allow you to load another DA.) Any windows opened by the DA will be closed and all the memory used by the DA will be freed and returned to the operating system.

It is possible to have more than one Chameleon resident at once. Simply rename a copy of The Chameleon file (Chmeleo2.Acc ?) and re- boot. You now have two Chameleon slots, both of which can be used individually.

Configuring The Chameleon

There are a number of elements within The Chameleon that can be configured to suit your own particular set-up.

It is possible to have a specified DA loaded automatically - in fact The Chameleon is already configured to load the file CONTROL.ACX if it is found in the root directory of the boot drive. Any DA loaded by this method can later be un-loaded as described above.

You can configure The Chameleon to search a specified path for DA's during the selection process (ie C:\ACCS\), allowing you to keep all your DA's neatly in their own folder.

If the key press combinations used by The Chameleon conflict with any of your other programs they can be changed to suit.

Unfortunately, all these changes can only be made by loading a disk editor and getting your bits and bytes dirty (oooer missus!). The process is not very user-friendly but the changes that need to be made are described in the text file that accompanies The Chameleon. (Warning: make a back-up copy of the program before you attempt to make any changes.)

Problems

Yes, I'm afraid it's not all plain sailing.

There may be some situations where The Chameleon is unable to load or un-load a DA. You will normally be alerted by a dialogue box and fortunately these are relatively rare. One notable program which will not allow you to load DA's from within it is Protext v5 unless it is replacing a DA loaded before Protext was run!

Another program which has a complete dislike for The Chameleon is Timeworks Publisher. You are allowed to un-load a DA provided it was loaded before Timeworks was run but any attempts to load a DA will result in a row of bombs.

There are also some DA's which have this effect on the system whenever you try to load them. It can be a matter of trial and error. My advice is to test your DA's before you use them in anger (and lose valuable data), perhaps creating folders of Chameleon-friendly DA's and others.

I did have one other difficulty with The Chameleon which almost caused me to ditch it altogether. When attempting to load a DA which makes use of a resource (RSC) file, The Chameleon always searches the root directory of drive A. This is not much use if your DA's reside anywhere else!

I had a number of attempts at solving this problem by trying to set the environment variables to direct the search to the relevant path. The option within NeoDesk 3

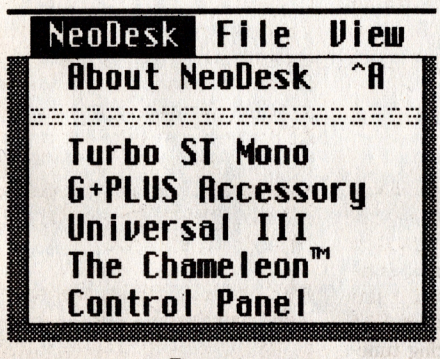


Figure 1

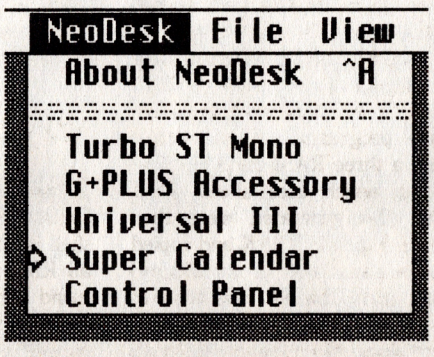


Figure 2

failed as did a patch program written by The Chameleon's author.

At about this time I received a copy of The ST Club Disk Mag 23 containing another patch program, run from the Auto folder, called Environ.prg, which manages to achieve the desired result.

So, there you have it - The Chameleon. A simple program which allows you to access almost any DA at almost any time without the disadvantages associated with some of the other programs designed to perform similar tasks. Try it - you won't regret it.

Cons-Fix (v1.3)

Do you use Fontkit Plus 3? Do you use QuickST or Turbo ST? Do you use NeoDesk or Gemini? And do you have problems using the Print Font option from within FontKit?

If the answer to the questions above is "Yes", then you need Cons-fix!

Apparently, there is a compatibility problem between some software blitters and some replacement desktops when it come to the re- direction of output. The only program I have which has displayed this problem is Fontkit Plus 3 which prints to the screen (see fig.3) instead of the printer (and causes other screen corruption to take place). I had found that the solution was to turn off Turbo ST through the Desk Accessory (I don't know if Quick ST has a similar option).

Cons-fix is an Auto folder patch which cures the problem .... nuff said!

Other Programs

There are a number of other programs on the disk, which I haven't used: either they don't work, or they don't do anything for me. I have given very brief descriptions below.

ENV.PRG - An environment setter (see above) which I have been unable to get to run.

VDI-FIX (v1.10) - Claims to remove a bug in the management of VDI workstations.

TOS14FX5 - Claims to fix bugs which appear in the Atari patch program TOS14FIX (which itself is a patch to fix bugs in TOS 1.4).

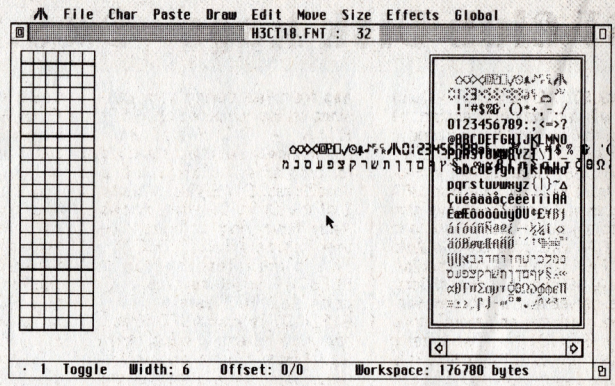


Figure 3

SYSMON - For techies only. This is a Shareware system monitor.

How to get them

The Author of these programs has retained copyright but allows free distribution amongst private users - this is Freeware. He has decided that he does not wish his programs to be distributed through PD libraries (which is his right), but has authorised unlimited distribution by *private* users.

As a private user, I am willing to send you a copy of the disk I received from Karsten Isakovic, along with a disk editor and a copy of Environ.prg, in exchange for a disk containing your favourite PD software. Single sided drive owners (are there any left?) should send two disks.

Send your disk(s) and an SAE to:

Adam Boocock
20 Caroline Close
West Drayton
Middlesex UB7 7LF

PD Update 12.5

Utilities

UTI.201: TLC Utilities v2.0: TLC ATTR v2.0 - Allows file attributes to be changed: read only, hidden, system, archive bit, and fast load; TLC BOOK v2.05 - Address book with a date reminder facility; TLC FILE FIXER v2.00 - searches a batch of files for a given string, and replaces it with an alternative string; TLC FORMATTER v2.03 - up to 10 sectors, 82 tracks; TLC NAMER v2.0 - Allows the use of extended characters in file names; TLC SOUND MACHINE v2.00 - Sound sample player. TLC RSRC - Converts GEM resource (*.RSC) files into GFA basic v3.0 *.LST files; TLC SHOW - Displays Spectrum 512 pictures (DS).

UTI.202: AIM March '92 disk: ARCShell v3.1 - GEM shell for ARC and LHARC compression utilities. BONBON - Two games from Germany: Breakout and Kubis (a Tetris clone). B_BUNDLE - Decorative border maker accessory for Calamus. Creates Calamus CVG graphics from border corners and sides. Comes with five borders and documentation telly you how to get up to 100 more! CRAYOLA - PageStream color palette containing color definitions to match the 64 crayon set of Crayola Crayons. DISKDIAG - Examines your hard disks and warns you if it finds problems. FILETOOL - A mouse-driven file utility that lets you copy, rename, delete and move files, create folders, etc. FLEABYT3 - Three new versions of Fleabyte calculation accessories. Fleabyte\FFS is a full function scientific calculator; Fleabyte\SF is like FFS only with support for significant digits; and Fleabyte\SX is a "standard" calculator. All three can export their calculations into window-based GEM programs ($GFA). FUJIWTCH - a mouse pointer that looks where it's going and falls to dreamland after a period of inactivity! A ticking watch replaces the boring busy bee! A spinning or rainbow Fuji adorns your menu bar. GEMVLP26 - working demo of GEMvelope version 2.6 - A feature packed envelope printing package. HDINFO12 - renames hard drive icons to reflect the amount of free space available on them. HSFIX - A high speed modem fix for owners of TOS 1.4 or higher AND a 16MHz or faster upgrade. Stops character loss and speeds up overall performance. INSDATE - accessory that sends the current system date to any open application. LQSET - very nice utility for controlling the multitude of printer settings available on an Epson LQ printer. MSTE - collection of four small programs to set various Cache and Speed settings for the MegaSTE computer: FAST (16MHz, Cache), NORM (8MHz, No Cache), FASTNC (16MHz, No Cache) and WHATAMI (tells you your current configuration). NBM21 - NBM v1.2 is a benchmarking program for your ST/STe/TT. It performs a group of six tests, times them and allows you to compare the results with other machines. PANTONE - EPS graphic containing the full Pantone colour palette. Loading this graphic into PageStream 2.1 gives you access to all of these colours. PGSPRNTR - four beta printer drivers for PageStream 2.1: HP DeskJet 500C, HP PaintJet XL, SpectraStar CMY and Okimate colour printers. PGS_CS - accessory for PageStream 2.1 which allows access to those "odd-ball" characters which normally would require complex key combinations. PINHEAD v 2.1 - now compatible with all versions of TOS in ROM - speeds up the loading of all programs. PROCALC - calculator similar to the one in the STBook. Supports Scientific, Binary, Octal, Decimal, Hexidecimal and Time (H:M:S) calculations. SPELLONE - A very good, GEM-based spell-checker. TURTLE - The latest version of George Woodside's excellent hard drive backup program. UPDATE MAKER - compares two versions of a program and creates a binary data file of the changes. Can create a data file including just the change info, or it can create a "ZAP" file ready for use by Superzap. (DS)

UTI.203: AIM April '92 disk: Arkade Controller v 1.7 - controls sending FoReM BBS files to games. EdHak 2.30 demo. Fully functional as an editor for QuickCIS, but limited to a 4K edit buffer. When used by itself, it will not save to a file or disk sectors. Adds roughly 20 new features since version 2.25. EMPIRE20 - Galactic Empire on-line game for Michtron's BBS 3.0. FZT_D211 - FreeZe Dried Software Terminal 2.11. MicroTalk v 1.05 is an on-line reader/reply program for Qmail for the PC and Turbo BBS or MaxiDoor for FoReM. SEEKER - Gold Seeker, a Lode Runner-type game. Allows you to create your own screens. Comes with 32 screens! (C) SNOFITE - Even in the summertime, you can now enjoy a good snowball fight! Throw snowballs or slushballs and build snowmen in this fun two-player game. (C) TTTIMERS - Two programs for fixing/finding problems with system clock speeds. TTTIME is a CPX module that allows you to set your system clock to run slower or faster. VENDOR - mini-database containing name, address, phone and CompuServe user ID info for software and hardware vendors. TLC_FIXR - File Fixer allows easy searching and replacing of ASCII text strings within programs. TLC_FORM - disk formatter that formats backwards, can do a 'hard verify' and formats using the "dead sector" scheme to make disks read/write faster than twister format. TLC_NAMR - File Namer allows you to use any of the STs extended character set in your filenames. TLC_PLAY - Sound Machine - loads and plays digitized sound files from SoundOff!, ST Replay, MasterSound, DigiSound, and more! (DS)

ST Club Disk Mags - DMG.27

DMG.27: AUTOSORT - Quick and efficient way of changing the order that files will be executed in your AUTO folder. AUTOZEST - Auto ZeST creates NeXT look-a-like front ends for your own GFA programs! Simply 'draw' your own custom graphic user interface in this CAD type program and Auto ZeST will save GFA code to disk. Create 3D push buttons, sliders, lines, carved text, info boxes, windows, platforms and more! Mono Only. BONBON - Two classic games: Breakout and Kubis (a Tetris clone). BOOTEDIT - Simple set-up at boot-up utility. CAL_FMT - Calamus font file format plus example program. CHKMIDI - Test your MIDI cables quickly and easily! Just plug one end into the MIDI out port, the other into the MIDI in port, and click on Test. CLOCK - A nice little analog clock desk accessory with C source code. DCLOFF - DC Light OFF deselects the floppy drive, turning the drive's light and motor off. DCMETER - DC Mouse-ometer lets you know how far your mouse has travelled during your sessions on the computer! DCREZRUN - DC Rez Run automatically switches resolution for programs that only run in a specific rez. DIVERT2 - Version 2 of the Drive Diverter. Allows many "floppy only" software to be used from hard disk. ELFBD11 - This is the latest revision of ELFBOOT, which now fully supports ALL TOS versions. Put ELFBOOT in your AUTO folder, and you'll be able to select desktop.inf files, choose programs to run, select desk accessories, select and/or re-order AUTO folder programs, select ASSIGN.SYS files, and fully control system colors and parameters. FILETOOL - a file manipulation accessory and a replacement file selector. HPDESK - HP-Deskjet 500 printer utility that supports many features such as horizontal and vertical printing, ASCII text or graphics printouts, configurable Dots Per Inch (DPI) and MUCH more. INSDATE - Insert Date Accessory enter the system date into a text file without typing. LISTINGS - Programmers' Forum listings for ST Applications issues 12 to 15; plus Cookie Jar listing from ST Applications issue 15. LOCK - Password protect your ST. MIDIKBRD - This is a MIDI desk accessory that graphically displays a keyboard on the screen. POKRSQRS - If you like solitaire and you enjoy poker, you'll love Poker Squared! Mono only. R3_DRVRS - vast array of printer drivers for use with Redacteur 3 in text mode. RAM_TEST - Comprehensive RAM testing software. RD UTILS - Three support utilities for Mark Williams Co.'s RDY/E ramdisk. REVENGE - Jeff Minters latest shareware offering: Revenge of the Mutant Camels (C). ROOST - Postscript font for PageStream. SPELLONE - Nicely done spelling checker with dictionary. Runs a PRG or ACC. STUNARJ - Here it is, an ATARI ST version of the new hot PC compression format: 'ARJ'. Extractor only. WHATIS47 - Version 4.7 of Bill Aycock's popular utility. Recognizes 86 different file types. (DS)

DMG.28

DMG.28: AV375 - Ascii-View [v3.75] - an ASCII text viewing progra. BENCH2 - Benchmarking software to compare different ST configurations. COMPO - text files to accompany Compo Hotline column in ST Applications issue 16. CPX - Three modules for the new Atari Control Panel: Newdesk Icon editor - demo version of a utility for TOS 2.x+; VANITY. CRSRC - a system for eliminating resource files from programs developed in Lattice C v5. DBLEFEAT - DabbelFeature: disables or enables the display of growing and shrinking boxes when dialog boxes or windows are opened and closed. Second, it can redirect drive accesses. DC Drop DTR v1.0 - hangs up a modem quickly. DC GTP (GEM Takes Parameters) v1.0. Allows TOS versions below 2.x to run GTP applications. DC Hang Up v1.0. DC Hang Up will disconnect your modem after a user defined time of modem inactivity. DC Invert v1.0 - flashes the screen whenever a BELL character (ASCII 7) is printed. DC No Alert v1.0 - keeps an alert box from being displayed and will 'fake' the return of the DEFAULT button. DATA DIET DEMO from Double Click Software. Demo version of this utility that allows files to be compressed when saved to disk and reloaded. DIRPRINT - Simple ACC to print the contents of a disk. DIRSORT - Utility to sort files within a folder. DIVERT - Drive Divertor - Allows software that is designed for floppy only systems to be run on a hard disk. DOUBLE2 - Double Screen Height emulator for STE and Mega STE - Version 2 of this super-smooth large-screen emulator. DSX_110 - does a quick "Show Info" of a drive. FLGSET - Flag Set (PRG and ACC) - set the flags in the header of an executable file. F_SORT11 - simple handy utility to sort text files alphabetically. GTP - allows users of TOS 1.XX to pass parameters to a GEM program with a GTP extent. JCLABEL - Powerful and easy to use label maker. PAR_SER - Two accessories that capture printed output and redirect it to either the RS232 port, or to a file. PATTERN - irrelevant pretty patterns. PRINT_SC - utility for quick screen dumps. PROQUEUE - VDOS ProQueue Shareware Public Release 3.0. Replacement Desktop - over 50 disk, file, and system utilities and slots for auto-execution of 101 user definable programs. RT_MOVE2 - Holding the right mouse button will give file MOVE rather than COPY with TOS 1.4+. STBLANK - desk accessory which blanks your monitor after a user definable time of inactivity. STDCAT5 - STDCAT V5.0b. - An excellent program that can be used to catalogue diskettes and hard disk partitions. SYNTHI - French paint package (with optional english menus) in the style of NeoChrome Master. SZSHELL - a simple graphical environment for Sozobon C programs. ULTISNAP - snapshot program which hooks itself into the system bootup procedure and is activated by pressing the reset button. (DS)

DMG.29

DMG.29: 1SPOOOL - configurable printer spooler - uses 1st Word Plus CFG-files. ANIMTOOL - utility for stringing a sequence of low-res image files together into an animation. BED - examine or edit either disk sectors, files, or memory. BOINK - two fancy animated screen savers for colour monitors. CHANGES - increase storage space on disks by changing cluster size. DFORMAT - fast and flexible disk format utility. DISKFIX2 - recover files from hard disks. ELICOUNT - Eliemouse What Count's Next Game - counting game for young children. ENVIRNMT - Use it to set the environment strings. EPSON_BJ - Converts Epson (24pin) fonts into downloadable fonts for the Canon BJ10e. FINDER10 - Finder v1.0 File Finder - simple utility that can help you locate a file that contains a particular combination of words or phrases. GHOSTWRT - The Ghostwriter - 'types' a message so that texts prepared off-line can be uploaded to BBS systems that do not permit uploading of text files into message areas. JAMES12 - excellent multi-function control panel accessory. JAR12 - lists contents of Cookie Jar. KRASKA - powerful fractal package. LISTINGS - Listings from Programmers' Forum in issues 16, 17, 18, and 19 of ST Applications. MAKEFAST - set the Fastload bit on programs so that they load faster with TOS1.4+. MEMORY - Freemem - Reports total memory (RAM), free memory, and used memory. xxxxST - set of programs to reconfigure STs to a lower memory specification. MONU_DEM - Demo version of this well featured Mono monitor emulator for colour displays. MOUSEBT3 - Mouse Boot is an Accessory, Auto-boot, Desktop, and Assign.sys file manager. Mouse Boot will also hold up to 20 presets of the most commonly used file combinations allowing you to quickly select them upon boot-up. PRTUTILS - pair of useful simple printer utilities. RE_BOOT3 - Configurable hard disk spin up re-booting program that waits a set amount of seconds before re-booting. SCRUB ST - permanently erases file information from disk. TOS_CEH - TOS-Critical Error Handler v1.2. UVK_DEM - a cut-down version of the "Ultimate Virus Killer" version 5.4 - version 5.4D. VIEW - lets you view just about any ST picture format: Degas (Compressed or Uncompressed), NEOchrome, Tiny, Spectrum, Art Director, and Doodle pictures (DS).

Inside Info'

INI.58: Inside Info 58: FEATURES: Atari News, History - One week in Atari history from 1985, Leonard Tramiel chews the cud on a GEnie Real Time Conference, Industry News, Multi TOS - preview of Multi TOS, FSM GDOS - summary of FSM GDOS, Falcon - More cranking of the rumour mill on Atari's forthcoming ST replacement, Joppa Fax - Straight Fax from Joppa Software, Explorer - editor John Jainschigg talks about the publication and Atari, Gadgets - Dave Small warns on the dangers of trying to cut corners with the SST board, DSP - a look at Digital Signal Processing, SM147 Monitor - info on the new SM147 monochrome monitor, Hayes AT - description of the Hayes AT command set. ST BASICS: A series of beginners articles by Will Visser: Precautions - How not to mistreat your Atari. The Desktop - Fundamentals of the desktop. About GEM - Fundamentals of GEM. Filing System - Files, Folders and the like. RAM Disks - The ins and outs of RAM Disks. Disk Formats - All about formatting ST disks. Hardware - Which processor does what in the ST. STe Memory - The memory map of the STe. WHATS NEW: Calamus SL, SL Modules, HD Utilities - review of MOS HD utilities, Warp 9, Macros - review of Abbreviator, the accessory Macro maker, Megapaint 4, Multiplay - educational software for introducing children to mathematics, Kid Publisher Professional 6.4 the DTP program for children, Where is ?, Pure C, Turbo 30, HINTS/TIPS: TT Games, Power Up - How to modify an ST for a delayed start, How to deal with the file that refuses to budge, Replacing the Atari SH204 HD, HD Backups, MS Mouse - How to connect a Microsoft mouse to an ST, ARC Problems, How to clean your SLM804, Summary of various memory upgrade kits, Bob Dobbs. (DS)

Calamus Fonts

FON.119: Calamus Fonts: Benjamin, Caligrfy, Compart, Crackfir, Downwind, Electrix, Hudson, Magic, Norma_y, Party, Pinney, Press1mc, R_honda, Rocky_I, Rocky_Ii, Saturnus, Sixties, Surfing, Swing, Twist_I, Twist_r, Vision. (DS)

FON.120: Calamus Fonts: Block, Capote, Comicbk, Cstriped, Donut, Gabi, Harringt, Lores_16, Mimeo_r, Miranda, Norm, Pinsel, Polo, Races, Rudelsb, Script, Shocker, Template, Tempra, Tesla, Twist_b, Typer (DS).

WP demo's

WPR.54: TEMPUS WORD 2 demo - latest demo version of this super-fast multi-font word processor. Still in German only! (DS:M)

WPR.102 and WPR.103: SIGNUM! 3 Demo - Demo of the latest version of this highly respected document processor. This demo version does not include the module for printing documents. In German. (DS:M)

Colour Art

EXTENDED SPECTRUM 512 PICTURES - Collections of pictures converted from GIF format into Spectrum 512 pictures up to 6 screens high. Each disk includes a viewer which will scroll the pictures vertically. All of these disks are (DS:C)

SSC.85: Hotbabaes 1-7, Hot Pose.

SSC.86: Hotbabes 8-12.

SSC.87: Hotbabes 13-16.

SSC.88: Hotbabes 17-19.

SSC.89: Hotbabes 20-23.

SSC.90: Hotbabes 24-27.

SSC.91: Hotbabes 28-31.

SSC.92: Hotbabes 32-35.

SSC.93: Hotbabes 36-37.

SSC.94: Boris 5, Eagle, Fantasy 1-5.

SSC.95: Arabian, China2, Bikini, Blue Cat, Bumleg.

SSC.96: Batman, Bluebed, Boris, Boris Group, Elephant, Glass, Topless.

SSC.97: Back, Bedhumm, Blue Box, Bluepose, Cowgirl, Indian, Joker, Tatto, Vampire.

SSC.98: Boris 1-4, Cave.

SSC.99: China1, Face1, Face2, Genie.

The order Form for these disks is on page 57.

Jeremiah's Journal

Splinterbone

If somebody asked you to recreate Dungeon Master but to do it differently, where would you start? Teque and Domark seem to have found a satisfactory answer. Jeremiah casts an enthusiastic eye over the Shadowlands.

"Dungeon Master" (henceforward, DM) was the original pioneer of the "first-person perspective 3D maze" type of adventure game. Its success guaranteed that, for a while at least, the imitators following in its wake would not stray from that proven formula. Bloodwych, Xenomorph, Captive and several others (some not available on the ST) duly came and went, and although each attempted to add something of its own to the established standard, the basic DM mix remained unchanged. Now, for the first time in the five or so years since the launch of DM, there comes a game which represents a genuine advance on the fundamental concepts embodied in that revered old classic.

The advances inherent in Shadowlands are principally twofold.

Firstly, the game rejects the familiar first person perspective and adopts a third party isometric outlook. This means that instead of observing the meanderings of your party through the eyes of one actually travelling the twisting corridors, you take the viewpoint of an omnipresent body separated from the party yet observing and controlling their actions. However, unlike most isometric games, the playing area is not divided into discrete rooms and corridors but is a continuously scrolling, densely detailed environment. This immediately gives the game the totally different look and feel from DM that its predecessors have lacked.

The second development is to actually give you a full four characters to utilise and control. DM and its various clones all featured a party of four characters with varying abilities and skill levels which could be individually developed. However, apart from combat situations, the members of the party were incapable of any individual actions or responses, and even in combat their decisions were limited to whether to join in an attack or not. Otherwise, the party moved as a party, they solved puzzles as a party, they rested as a party, they saw with one set of eyes and they manipulated with one pair of hands. For all intents and purposes, they represented no more than four slightly altered aspects of the same personality.

In Shadowlands however, the four members of the party really are distinct from each other. They can move in one direction all together, or they can move in four different directions separately. They can explore, discover, solve puzzles, fight and collect objects either on their own or collectively as a team. In addition, you are not simply limited to the individual or the full party options as you can perm any combination of party members from the four available. So you can have four teams of one, one team of two with two teams of one, one team of four, two teams of two, one team of three with another team of one, or any other combination which I might have missed. In short, your options are now considerably expanded as you really do have to think about how to deploy the four adventurers to best advantage.

Koranos

The plot of the game is a little different also. It starts with your death and the death of all your people. You are Vashnar, Warrior Prince of Koranos, slain by the cruel Overlord of the Shadowlands in his ceaseless thirst for blood and conquest. But, before you died, you swore that you would not rest until the Overlord had been destroyed for his crimes and your people avenged. The power of that curse now binds your spirit to the lands that your body no longer walks and your quest for vengeance is about to begin. Using the medium of dreams you have drawn adventurers from far and wide to the entrance to the Shadowlands. From their number you have selected the four whose combined abilities offer the best chance of success. You must now lead these four through the menace of the Shadowlands, past the pits and the traps, past the undead and the beasts of horror until they can find and retrieve the bones which are all that remains of your earthly body. Then, onward again, to the Dark Temple where lies the altar of reincarnation which is the secret of the Overlord's long and terrible reign. Then, when your bones are placed upon that altar, will you live again. Then, you shall have your revenge. Then, shall the Overlord die!

This plot is outlined in the first four pages of the 27-page A5-sized manual and it is a mercy that the story isn't any longer than that since the writing is pretty poor and the structure is full of illogicalities. However, it is sufficient to set the scene and the tone of the game.

The first task to be tackled when starting the game is to generate your party of adventurers (although a Quick Start predefined party is available if you can't be bothered to create your own). Character generation has three aspects in this game. Firstly, you can customise each characters appearance by selecting your desired combination of hair, eyes, nose and mouth from the limited number of variations available. Secondly, you can give each adventurer a name of your own choosing. Thirdly, each character has attribute levels relating to their Strength, Combat Ability, Magik Level and Health. These are automatically assigned by the program but can be altered, within certain limits, so that the balance of skills better reflects your own taste and playing style. Once you've finished with the setting up of your party, you can enter Shadowlands proper.

The primary means of controlling the game is by using the mouse to click on Character Portraits. There is one portrait for each

character and these can be positioned along the bottom of the screen or one in each corner. A portrait is divided into several areas which can be individually highlighted. For example, click on the left leg, then click on an area of the screen, and the character will walk to that spot. Do the same thing with the right leg and the whole party will walk to the indicated place. Click on the left arm and then on an adversary and your adventurer will walk over to the nominated enemy and commence to battle him. Click on the right hand and then on an object on the floor and the character will dutifully pick it up. Finally, click on the head in order to make the party member eat and drink, or read a scroll or message.

The second means of control is the Inventory Screen and there is one of these for each character. The screen is divided into six areas. The Backpack area contains all the items currently carried by the adventurer and tells you the total weight of the load being dragged around. There is then an area which shows the item currently being held in the character's hand. Additional information relating to this item is also supplied (i.e. its name, its weight and the magikforce it contains). There is then a Chessboard area which allows you to set up various formations for your adventurers to adopt when travelling around, so that you can protect your weaker members by positioning the stronger ones in front of them.

The Statistics area details the character's combat and magik levels (these rise as the character progresses through the game and increases in experience). There are also ratings for Strength, Health and Armour. These are fairly self explanatory and, as usual, if Health reaches zero the character begins to die. Finally in this area, there are barcharts representing food, water and magikforce levels. If any of these reach zero, the character's health begins to deteriorate.

The concept of magikforce requires a little further explanation. Basically, there is a certain quantity of magik existing in the Shadowlands and much of it is embodied in the various objects you find scattered about the place. Magikforce is required in order to create successful spells, recharge depleted spell scrolls and to keep the spark of life shining brightly. Magik can only be absorbed from objects into a character's body, and it can only be absorbed from a character's body into a spell scroll. However, the efficiency of objects increases drastically with the level of magik contained within them. Therefore, a sword with a high magikforce will inflict a greater level of damage than a weapon with a low magikforce. Likewise, food with a high magikforce content is greatly more nutritious than food with a low magikforce level. So, draining the magik from objects in order to fuel your spells renders the original object largely useless. In addition, the magikforce contained in a weapon decreases as it is used. Therefore, even the most fearsome weapon will eventually become useless and have to be replaced. It is therefore a bit of a pity that depleted weapons cannot be recharged in the same manner as depleted scrolls.

The fifth area on the inventory screen contains the icons for loading/saving a game position, making a character eat and putting a character to sleep. The final area contains four more character portraits which when clicked upon will allow you to switch at will between the inventory screens of each adventurer.

Photoscape

The game starts with your four warriors assembled in an orchard field outside the entrance to the dungeons of the Shadowlands. The first thing to do is to search the entire area as there are a number of useful items to be found such as apples for food, sticks for weapons and torches for light. Once these are gathered in, the party will be ready to descend into the dungeons proper.

Inside, you'll begin to see the effects of the part of the game system which the designers have called Photoscape - "a new realtime system which realistically lights all areas of the game world, casting shadows and creating an unparalleled sense of atmosphere". In short, the dungeons are dark and therefore your adventurers must carry torches in order to light their way. What Photoscape does is disperse the light, from its source, in a logical manner, so that the area around the character carrying the torch is brightest with the illumination steadily dying away as the distance from the light source increases. This keeps areas which are a fair distance away from the party, or around corners, in darkness until the adventurers get there. The system works very well and succeeds admirably in recreating, in this different style of presentation, the effects produced by spluttering and dying torches in DM.

The route through the game, as far as I've played it, appears to be fairly linear. There is only one main corridor with a number of dead end rooms placed off it and, although the corridor loops and convulses wildly about itself, it is pretty easy to follow. This makes mapping the game to be more or less unnecessary which quite pleased me as, for the first time I can remember, I was actually at a loss as to how to go about making a map in this instance. For those of you who actually dislike mapping, this is obviously a bonus.

The pace starts off fairly gently. The game doesn't bombard you with battle situations right from the off like some role playing games tend to do. In fact, there are only a few adversaries to overcome in the initial stages, which is just as well since your party is very weak to begin with, and these serve to introduce you slowly to the mechanics of fighting. The emphasis is put on exploring and puzzle solving and becoming acquainted with the game system. However, later on, the opponents become more plentiful and powerful and a proficiency in combat will be a much desired necessity.

The quality of the puzzles is very high and most will require a modicum of thought to overcome. You will usually be given a clue, often cryptic, as to what is needed for success and pondering over the clue can sometimes be as enjoyable as experimenting with the problem itself. The design also takes shameless advantage of the fact that your party is composed of four individuals and goes to great lengths to create extra puzzles revolving around splitting up your resources. For instance, you may come to a locked door with two pressure pads placed in front of it. The solution to opening the door is to split your party into two pairs and get each pair to stand on one of the pressure pads. The door is now opened but, unfortunately, this process also triggers a transporter beam which instantly moves one of your pairs from where they are to another part of the dungeon which is densely populated by bloodthirsty opponents. The task now is to move sufficiently quickly so that your remaining pair locate the transported pair and swiftly come to their aid before the greater enemy force can overcome and destroy them.

I'm currently battling with a similar problem where three members of my party have been transported to individual prison cells where they are besieged by man-eating rats which ceaselessly nibble at their Health points and can't be killed. The task of getting my one remaining party member to free the others before their Health reaches zero and they die is proving to be a real challenge - which is another way of saying that I haven't actually managed to do it yet!

There seems to be little doubt that Shadowlands is an exceptionally polished product. The graphics are well drawn (with an obvious Japanese Manga comic art influence), the game system is well implemented, the puzzles skillfully created and the atmosphere realistically rendered. I wasn't too impressed with the system of swapping items between characters inventories as it seemed unnecessarily clumsy in practice. However, this remains a small gripe. Overall, Shadowlands does justice to its DM roots, but contains sufficient innovation and imagination to stand as a worthwhile and enjoyable game in its own right.

Product: ..... SHADOWLANDS
Designed and Programmed by:..... TEQUE
Published by.....DOMARK SOFTWARE
Price..... £29.99

The A to Z of the ST

Compiled by Mark Baines

Part Twelve: T

TAB: ASCII character 9 performing a horizontal tabulation.

Table: Synonymous with *array* in programming.

Tabulation: To move the printing position on a printer or the cursor on a screen to a preset position to the right (horizontal tab) or to a lower line position (vertical tab).

Tape: Magnetic or paper storage medium, the latter practically extinct.

Task: A logical unit of work as performed on a computer. In multiprogramming, the basic unit to which resources are allocated.

Telecomms: *TELECOMMunicationS*. The organisation and facilities that provide a user-to-user communications service between two sites, encompassing telephone, telegraph, radio and satellite-based systems.

Telecommunications network: A data network, the lines and facilities of a common carrier.

Telecommuting: Working from home or at a remote site, communicating with the main work place by telecommunications.

Telemetering: Using communication links to carry the outputs of sensors to a computer at another location to be recorded and analysed.

Teleprocessing: Data processing in which individual parts of the total function is performed at remote sites joined by communications links.

Telesoftware: Software distributed by Viewdata systems, such as Prestel.

Teletex: Word processor network designed to produce letter quality communications between subscribers.

Teletext: System for broadcasting text material in conjunction with broadcast television during beam flyback time and decoded by special circuits in the receiving set, such as Ceefax and Oracle.

Teletype: A send and receive typewriter from the Teletype Corporation. Such typewriters act as a terminal in a asynchronous communications link.

TELEX: World-wide, dial-up teletypewriter service provided by Western Union.

Temporary file: A scratch file, a data file usually overwritten at the end of the program execution.

Terminal: Device by which a user can communicate with a computer, such as a VDU or Teletype, usually remote and sometimes dumb. Also, a connector soldered or crimped to the end of a cable or a post or screw to attach to such a connector.

Terminal program: Software enabling an intelligent computer to communicate with a remote, host computer via a telecommunications network.

Terminate: To suspend or stop a program execution prematurely. Also, to connect resistors to the end of any data carrying cable to reduce or eliminate signal echoes.

Test data: Special input data designed to test the functionality of a program.

Test program: Diagnostic program that is run to test hardware circuits for faults.

Text: Data in character form as printed or displayed. Also, that part of a message with significance in a data communications transfer.

Text attributes: The properties of text characters displayed or printed, such as those of alignment, emphasis, font etc.

Text editor: Program used to manipulate and structure textual data, usually not possessing the special formatting capabilities of a word processor, but producing straight ASCII files.

Thermal matrix printer: Printer with a print head containing electrically heated styli that when pressed against special heat-sensitive paper, form a dot matrix character. They are inexpensive, quiet but produce poor quality output.

Third-generation computer: Computer using semiconductors in integrated circuits for data storage and manipulation.

Threshold: A level at which something becomes evident or detectable.

Throughput: The amount or work performed per unit time, such as instructions per second.

Time base: Repeating sequence of accurately spaced pulses of specified interval available in a computer or other device to control the synchronisation of events.

Time frame: Unit of time in which an item of data can be sent and recognised by a receiving system in synchronous and asynchronous transfers.

Time-out: When a timer runs out and signals the end of that period in which an event can occur.

Time sharing: A multi-programming, multi-user computer system that provides multiple users their resources in 'time slices' on rotation or other methods. Synonymous with time slicing and time interleaving.

Timer: Device that provides regular time signals for controlling or synchronising a sequence of events.

Token: The smallest meaningful representation of a concept in a language, consisting of a character group that loses its meaning if divided, such as 'Fred' or 'integer'.

Tone dialling: Telephone system using distinct sound tones rather than a series of 'clicks' to represent each dialled number.

Top-of-form: The first line that is printed on a form or page of continuous stationery.

Topped: The uppermost and currently active window in a multi-window environment.

TOS: ***The** Operating System*, and not 'Tramiel Operating System'. The operating system of the Atari ST/STE/TT computers with more than a passing resemblance to MS-DOS.

TPI: *Tracks Per Inch*. Unit of measuring track density.

Trace: Also log, a record of a series of events as they occur. Also, a listing of the instructions of a program in the order of execution.

Trace program: Program used to monitor the execution of another, logging each instruction and showing its result before passing onto the next, usually under user control.

Track: Thin path on a magnetizable surface medium (usually disks) where data can be written.

Track density: Number of tracks per inch (measured along the radius) of recording surface, typically 135 TPI on a 3½" floppy disk. It is the width of these tracks that mostly accounts for the storage capacity of a disk.

Tractor: The two sets of rotating teeth on a printer that engage the holes at the edge of continuous stationery, thus moving it vertically past the print head.

Transaction: In an on-line system, an interchange between a user and the computer. Also, an enquiry. Also, a 'job' in batch processing system or the record that causes the updating of a master file.

Transaction file: A record of all interchanges at a computer terminal used to update a master file, or for charging and/or statistical purposes.

Transcribe: Synonymous with copy. To read data in one location and write it to another, often with a change of medium or representation, such as from paper to disk.

Transfer: Synonymous with move. To read data in one location and to write it to another on a different medium and, usually, device.

Transform: To change the form of data in such a way that the original can be reconstructed by a reversal of the operation, such as a decimal to binary conversion.

Transient: Not always present, or occurring at unpredictable intervals. Also, in process of change from one mode to another and an unpredictable short duration change in a circuit condition.

Transient Program Area - TPA: That area of RAM memory reserved for programs loaded from disk.

Transistor: Common semiconductor switch or amplifier.

Transition: A change from one condition to another.

Translator: Program, such as a compiler or interpreter, used to convert source code into object code.

Transmission: Sending data over a communications link between separated locations.

Transparent: Any functional unit or computer operation that is not evident to the user.

TRAP: An instruction used to cause a 68000 processor exception to occur. The processor jumps to the start of a routine, the address of which is stored at the appropriate Exception Vector location returning control to the original calling routine when finished. There are sixteen available TRAPs for use, four being commonly used by the operating system.

Trash can: WIMP environment icon representing a delete function for files. Under GEM, the files are, normally, irrecoverable. On the Mac, they are retrievable.

Tree: An hierarchical structure of entities and often a hierarchical net or multi-level data structure.

Tribit: Three bits treated as one unit.

Tristate: Capable of assuming three different states.

True: One of two possible logic conditions, typically represented as a 1-bit or the value 1.

Truncate: To remove leading or trailing digits from a number without regard to the effect upon the remaining digits or to shorten a string.

Truncation error: An error in numeric data introduced by truncation.

Trunk: A major data transfer path within a communications system.

Truth: Either of the two possible input or output states of a logic operation.

Truth table: Table that gives the output of a logic operation for each possible input combination.

TTL: *Transistor-Transistor Logic*. Common semiconductor memory and logic circuit with high speed and low power dissipation.

TTP: *TOS Takes Parameters*. The Atari executable program file extender indicating that the program can take parameters from a command line.

TTY: *TeleTYpe*. Also often refers to to a dumb alphanumeric text terminal.

Tuning: Optimising the performance of operation, usually with respect to speed.

Type: In classification, attributes by which entities are allocated to a group. Also, to print using a typewriter or to enter data into a computer via a keyboard. In printing, embossed, metallic, shaped characters used in printing in certain printers.

Type face: A named style of letterform such as Times or Helvetica, consisting of a family of fonts.

Type fo(u)nt: Set of letterforms of the same size and style in type, photographic or computer bit representative form, such as 12-point Times Italic.

STICKS AND STONES

Chances are that your first car was a rusty old banger, so why not start off a computing novice with a second-hand box of guaranteed rust-free plastic? Günter Minnerup delves into the bargain basement.

One of the occupational risks of being known as a "computer freak" - although I personally much prefer the more deferential title of "computer expert" - is being asked for your advice by people who are about to buy their first computer. Typically, this is for word processing and the machine is going to be used as little more than a glorified typewriter, at least initially. The questioner usually has no previous knowledge of computing and a very restricted budget: after all, if the computer is to replace a cheap mechanical or electronic typewriter, why spend more than absolutely necessary?

Tiresome as it may be to have to explain the same basics every time, I just cannot resist this situation. Apart from the flattered ego effect involved in being regarded an "expert" at something, it awakens my sense of social responsibility - there are just too many sharks lurking out there, just waiting to relieve the unwary and innocent of their hard-earned cash in return for inappropriate equipment. What would they do without my help? Probably walk into Dixons and be advised by some YTS trainee that the Amstrad PCW is totally compatible with the industry standard because Alan Sugar is Chairman of Tottenham Hotspurs. Worse, they could end up in the clutches of their firm's resident PC guru who will firmly instruct them not to settle for anything less than a 486 with Super VGA monitor, a minimum of 8Mb RAM, a 160Mb hard disk and Windows 3.1. Or perhaps try to flog them his old XT with green monochrome monitor, double 5.25 inch drives and 512k memory, a snip at £300...

If such visions do not make your hair curl as much as they do mine, you must be a very callous and selfish person indeed. For the truth is that anybody setting off on the path to word processing is very ill-advised to trot into Dixons or come within shouting distance of the DOS-oriented professional. Despite occasional accusations of biased advice, I almost always recommend the purchase of a second-hand ST. "Almost always" because there are exceptional situations when it could be better to go for a PC or Mac - when, for example, very close integration with an existing work environment is absolutely essential, or when money is no object, or when there is a clearly-defined second use for the machine, such as spreadsheeting or specialised technical applications for which the ST or its software is ill-equipped.

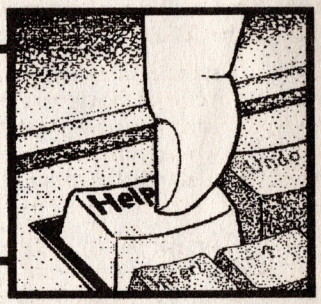
But for common-or-garden wordcrunching in the average, dimly-lit bedroom-cum-study, the excellence of the ST's high-resolution display on an Atari monochrome monitor takes some beating, and so does the performance and functionality of the leading ST word or document processing packages such as Protext, Calligrapher, That's Write or (the invoice is on the way, Paul) Redacteur. To achieve the equivalent with a PC or Mac would simply be prohibitively expensive.

But note the "second hand" - this is the key element in my advice. Computers are a bit like cars as far as their speed of devaluation is concerned, but unlike cars they tend to remain as reliable in advanced age as when they were first bought. To buy a first computer to be used mainly for wordprocessing on a limited budget, there is no reason at all why someone should pay the premium charged for a brand-new machine with a warranty, given the surfeit of perfectly usable, cheap second-hand ones in the classified columns of your local newspaper, Micromart and, of course, ST Applications. Like car owners, computer users like to upgrade to the latest model, thus ensuring a steady supply for the second-hand market. But few of the superior features of the new models are actually essential to wordprocessing: the extra colours, the faster disk handling, the superior sound - even double or triple processor speeds are meaningless with software such as Protext which is too speedy by far for my typing on a bog-standard 1040 with TOS Version 1.0 and two floppies.

Having recently helped a friend acquire such a beast, I have noted some interesting aspects of the second-hand ST market. The machines advertised basically fall into four categories: unwanted presents and regretted impulse buys, discarded games machines, those offered by enthusiasts switching to PCs or Macs, and those sold by upgraders to an STe, Mega or (very rarely) TT. The first category is, of course, as-new, but the vendors often have an exaggerated idea of the price they should fetch: I have been offered 520STs at £250 but if I wanted to pay as-new prices I might, of course, just as well go down to Dixons and enjoy the protection of the Sales of Goods Act. The games machines have generally had a good hammering in their previous life, rarely have more than a half meg RAM, and usually come without any monitor at all or a colour one, so they are not a good buy for wordprocessing unless you have enough technical expertise to give them a thorough check-up, are prepared to fit a memory expansion, and know where to obtain a monochrome monitor cheaply. The third category presents a different problem, in that vendors switching to a different platform also want to get rid of their software and whatever other ST-specific paraphernalia they have acquired, such as stacks of magazines, emulators, scanners or hard disks. This is fine if you really want those, but normally you won't and it can be difficult to persuade people to split the package. So your best bet are the upgraders remaining loyal to the Atari scene, as they will hold on to their software and peripherals, and usually have the most realistic notion of the true resale value of their three-year-old 1040, and will often be looking to sell the old SM124/125 with it to purchase a colour or multisync.

In my venture into the second-hand market on behalf of my friend, I ended up with a well-preserved 520ST, expanded to 1Mb and fitted with a replacement double-sided drive, complete with SM125 and a second external floppy, for £260. I don't believe you can do much better than that for a good wordprocessing platform that will leave any Amstrad, PC or Mac (if available for the same outlay) far behind on performance and ease-of-use. Add to that £70 or so for a discounted copy of Protext, and around £150 for a decent second-hand printer, and you have a sub-£500 set-up which no Alan Sugar could ever match.

FORUM



The Forum pages are a regular feature of ST Applications, enabling readers to exchange ideas and help each other out with problems. Whilst we attempt to briefly answer questions here, if you have additional information or ideas please do submit them for publication. What you consider to be trivial information can often be of condiderable use to other readers!

Please send your letters on disk if possible. Disks will be returned with a PD of the writer's choice. Longer submissions may appear as articles, in which case you will receive payment at our standard page-rate.

You can now post messages for inclusion in the Forum via the CIX bulletin board on 081-390-1244. All messages posted onto our stapplications conference on CIX are considered to be for publication. Private mail can be sent to us with **mail to paglo**, but do not expect an instant reply! Messages reprinted in the magazine Forum pages are identified by the CIX stapplications conference message number after the author's name.

CIX is a commercial system with a £15 joining fee and on-line charges of between £2 and £3.10 per hour. For more details see the introduction to CIX in issue 3 of ST Applications.

Key:

The following codes are used for each Forum entry:

J Pringle - Forum 29: Author who first raised the subject, and in which issue. In this case 29 refers to the Forum pages in Issue 29 of The ST Club Newsletter.

Q Question

A Answer

I General information or 'Input', advice, discussion, hints and tips, etc., with or without reference to previous Forum pieces.

● Editorial reply

K-Spread 3

R J Barber - Forum STA 19

A I have succeeded in getting a solution to R J Barber's problem - listings are enclosed along with the files DGCALC.SPD and DGCALC.SPM. (These are on this month's Disk Mag, DMG.30 - Ed.) The .SPD file is a small set of test data while the .SPM file contains both versions of the solution. There are two versions because the first involved creating a temporary data sheet, which looked very busy when it ran. The second was done using the original sheet only.

Some assumptions you need to be aware of:

* For the first solution, the sheet being operated on must be called DGCALC.SPD (or whatever name is used in the macro).
* For both solutions the cells AY0 and AY1 need to be available on the original data sheet and to be outside the normal range of the sheet. The 'single sheet' solution also uses AY2, AY3 and AY4.

The AY column was chosen because the minimum size of a K-Spread data sheet is 50x50, which means that the AY column will always be present. Clearly this can be changed in the macro if necessary.

* All the values which need dividing by four are assumed to begin with one of the digits 1 to 9. The reason for this is explained in more detail below. (If there are fractional values an extra line will need to be added to check for values beginning with zero.)

The whole process of arriving at the solution has taught me that K-Spread is in need of some updating. In the macros section some functions do not work as documented, some work inconsistently, and some simply do not work. I was pleased to hear that HiSoft have taken on the support and development of the package.

Some of the difficulties I encountered:

i) R J Barber's problem required that the cell contents be verified as numeric before a divide by four was attempted. So I thought that the obvious way to do this was to use the function CELL, which can tell you what the attributes of a particular cell are. The returned values when you ask for the TYPE of the cell are supposed to be as follows:

"b" Blank
"v" Value
"l" Label

Unfortunately, every time I used this function there was no result! Other uses of the CELL function returned expected results, but not this one. The same was true of the function CELLPOINTER, which carries out the same task but works on the current cell rather than a specified cell.

It is because of this that the macros check the first character of the cell contents and carry out the divide if the character is a number in the range 1 to 9. It can be done this way but it is a shame the required function did not work.

ii) I tried to use the function OCCUPIED_RNG() to check whether a particular column or row had been completed but was unable to do so. The command used was:

```
IF(ROW()>ROWS(OCCUPIED
_RNG()),true,false)
```

This should compare the current row against the number of rows in the range. It failed because the macro returned the current row on the MACRO sheet and compared it with the range on the DATA sheet. You cannot win when this happens.

iii) I got nothing but errors when trying to use the COPY command until I ensured that the destination cell was empty. Then it would (generally) work. This is completely undocumented and is certainly not the way the program works under non-macro conditions.

iv) When I was writing the version of the macro which did not use a temporary data sheet I got a macro error when trying to copy the result of the division back to the original location. The command used here was:

```
COPY([AY4],CURRENT_CELL(),0,1)
```

This should copy the contents of AY4 to the current cell, without replicate, and copying values only. The real frustration about this not working is that there was an identical line in the first macro which worked every time.

I resolved this problem by replacing the CURRENT_CELL() function with the string "R[0]C[0]" or "RC". These strings are interpreted by K-Spread as an offset of 0 rows and 0 columns from the current cell. These entries

should be interchangeable with the function but they are not.

Even more frustrating, the DELETE command which is used to delete cell contents will only work with the CURRENT_CELL() macro!

v) There is a specific command to allow you to set values for cells on the macro sheet itself. I started out using these but got totally confused trying to manipulate them or even gain access to them later on. I gave up on this aspect completely.

These are the major points. There were some minor ones but these were mainly involved with the learning curve and could have been avoided by more detail in the documentation on macros.

A couple of useful tips I would like to pass on about macro writing follows:

* Start your macro with the STEP() function. This function causes a macro to single step until you tell it to continue normally. When the macro is working you can simply redefine the macro start as one cell lower.
* Make all references to the data sheet absolute (i.e. [A0] instead of A0). I did not do this to start with and was frustrated when all the references changed when I moved the macro lines around.

Be warned, however, that even absolute references can change! If rows are added or removed from the macro sheet the references will change because they believe they need to. It is safest to actually move the macro cells rather than insert or delete lines.

* If you define the macro range as A1:A1 this is sufficient to mark the start of the macro. The macro will then run until it finds a RETURN() statement or until it finds an empty cell.

During testing it can be useful to run through empty cells. This will work if the macro range extends past such cells. For example, a macro range of A1:A50 will run for 50 cells unless it encounters a RETURN() statement.

Keith Thomasson

Samsung CI3312Z

W Hartley - Forum STA 17
P Holland - Forum STA 18
J R Leach - Forum STA 19

A I am writing concerning the problem that I was having connecting my Samsung CI3312Z TV to my STFM using the SCART socket (STA 17).

Since I first wrote the letter I have found a wiring diagram for the SCART plug that seems to work very well. (It was described in ST Format issue 33, Page 36.)

Here's the gist of the connections:

STFM		TV
Pin 1	---->	Pins 2 and 6.
Pin 2	---->	Pin 20.
Pin 13	---->	Pins 4 and 17.

Anyhow, thanks to P Holland (STA 18) and J R Leach (STA 19) for their suggestions.

W Hartley

SM124/125

John Dyte - Forum STA 19

A I have messed around with my SM124 monitor to get a larger image. I found that the optimum size (by my judgement) is 265mm on the diagonal. That's ten and a half inches, still not full out to the edges but a lot better than when I got it.

The problem is really one of focus: if you go right out you cannot get both the centre and the edges reasonably sharp. If you have ever tried photographic enlarging with a wide open lens you will know what I mean!

I made up a test chart to enable me to adjust proportions and focus using a paint program and some of those rather boring grid pattern fills. Presumably if the program says they should look like squares then they are squares... Use the edge of a piece of paper and make pencil marks to compare dimensions on the screen. A ruler can't get near the curvature or inside the mask!

I compromised my point of focus at about one third out from the centre; the middle is just starting to go off, whilst the far out edge is only just noticeably soft.

I can't understand all the stuff about 'killer' voltages inside TV's. I have had a good number of shocks from various bits and never had a burn or died yet. But I don't do it in the bath and I usually only brush live bits by accident.

There is nothing really useful in 'Second Manual' on this topic, but there is a full article on how to enlarge your screen on Inside Info Issue 54 (ST Club disk INI.54)

What I would like to see is a circuit diagram for the switch box to allow swapping from high res. to low res., thus leaving the TV and monitor plugged in all the time. I understand it is merely a matter of switching one ground lead.

Peter R Hill

● I've not yet met anyone who has actually been killed by the high voltages in a monitor... You can leave the TV and monitor connected and swap between the two displays by toggling the High Res. (mono) detect line.

C Compilers

Deborah Pate - Forum STA 19

I This is in response to your correspondant Deborah Pate who is trying to learn C in order to get text into an OCR. The obvious solution (I presume there's a good reason why it doesn't work, because if it does, it's a lot simpler) is to rotate the scanner 90 degrees, scan across the page, then rotate the scanned image back by 90 degrees to the original heading in the computer before running the OCR over it. If the facility does not already exist in the scanning software, writing a program to rotate a bitmap would be trivial compared to one to match up the edges of two marginally overlapping bitmaps.

I know what Deborah means about knowing a language in theory. I learnt C on PCs, and you can do quite a lot on libraries. To get any sense out of C on the ST it seems to me you have to learn a lot of machine-specific details to begin getting anything done. Don't get me wrong, I don't miss the PC's awful memory structure, but the fact that, for instance, to put a pixel onto the screen you only need to learn about Bios interrupts (which are relatively simple, and have a fairly consistent interface) made that aspect of life a lot simpler on that machine. (However, then you have to learn, by painful experience, about near, far and huge pointers, which nobody needs.) On the ST there is loads of documentation on the AES and VDI - fine if you want to learn GEM - but little for those who aren't heavily into machine code on simpler functions, which would be the place to start if there were instructions, so you have to learn to run before you can learn to walk.

'Stubs'? The only place I have come across that word in a programming context is in "The Practical Guide to Structured Systems Design 2nd ed." by Page Jones, published by Prentice Hall ISBN 0-13-690777-6, a good (machine and language independent) book on how to design (but not code) programs. There it means early versions of functions (or their equivalent in another language); the stubs do very little, but have the prototypes that the full functions will use. These are useful in the early stages of writing a program: they can be used to check that a function that is going to call a second function at a particular point in its execution is going to call that second function and respond to it correctly. A stub might return a value to test the calling function(s), and possibly output to the screen something to the effect of "Kilroy was 'ere". On the other hand, I have Prospero C, it could be that 'stub' is a Lattice keyword.

Richard Court

MIDI Matters

Martin Norfolk - Forum STA 19

I Reply, thoughts and feedback on Martin Norfolk's letter in ST Applications issue 19:

Keynote's excellent Chameleon is a commercial Program/Desk Accessory which comprehensively deals with disk storage and librarian functions for Sysex dumps. (Do not confuse it with the identically named and similarly superb DA accessory from Germany.) It includes a programming language to write your own profiles for unsupported instruments (although the number of supported ones is very large). Thoroughly recommended - I use it as my standard ST Sysex librarian (it costs less than £100).

In the PD arena, my Movie program (also available as a replay-only DA) offers pure (and very dumb) sysex dump storage without the librarian search and find/programmability of commercial offerings. Movie is part of

an extensive 'toolkit' of MIDI sysex programs associated with my 'System Exclusive' series in Sound On Sound magazine, and the toolkit is available from the SOS software pages.

My (understandable) bias notwithstanding, any serious MIDI musician should, of course, already be reading SOS!

Martin Norfolk dismisses X-or as 'over-stepping the mark'. Do not forget that X-or is a program for integrating large MIDI systems. It enables snapshots to be taken of all the associated sysex dumps for the configuration of a setup which apply to a particular song or sequence, and so avoids all the problems of trying to relocate the sounds (etc.) which were present in the MIDI instruments when the song was originally worked on. It automates much of this process (if used with a MIDI controllable Patchbay) and so makes this type of MIDI system backup much easier (and therefore much more likely to be done!). X-or's Achilles heel may be two-fold: firstly it works best using Dr. T's MPE switching/variable sharing environment, and so may not interface well with Notator or Cubase, but secondly and potentially more importantly for many musicians, the programming language is rather too much like very terse assembly language for ease of programming.

Martin Russ

Ten Most Wanted

Britt Johnstone - Forum STA 14

A The registered version of Cosh Sequencer reads and writes Midi standard files.

Michael Evans

OCR Software

David J Lindsay - Forum STA 19

I I have just bought the Atari ST Image Scanner, a Naksha hand scanner, on the strength that OCR software is under development, although they do not have a release date for it.

The scanner works with colour or mono monitor and can scan at 200, 300 and 400 dpi, and has four dither settings. The price is reasonable: I bought mine from my local one-man computer shop for £116.

David Paxton

What can an ST do?

P J Neesom - Forum STA 19

Q Reading through a magazine for the Atari XL/XE I came across an article on the "Atarilab" modules to enable 8-bit machines to sense light and heat and graph the information received. They sound like a useful accessory for simple scientific experiments and I wonder if anyone knows of anything similar for the ST?

I might have bought the packs to see how they work but the software is on cartridges and I do not know if these could be used by an ST.

They are based around an interface which plugs into the joystick port and into which the various sensors can be plugged. I am sure I have heard of something similar for the ST which can be used for driving simple robots.

Allied to the interface is the software which interprets the data that the computer receives. For users who do not programme their machines, this must be the most valuable part of the package. Has anyone already written routines like this? Would school users be able to link them into technology and science classes?

What other accessories can the ST use? Can you add a wheel and footpedals for a driving instructor? Can it remotely control a video recorder (perhaps mimicking the infrared signals from a handset)?

All too often computers are simply part of an office environment and the possibility of extending the use of my ST appeals to me.

Huw Williams

● The world of home computers (magazines) has moved away from the soldering iron wielding hobbyist image of ten years ago and is now heavily product-orientated. You now need to read electronics hobby magazines to find DIY projects for use with computers, and the chances are that you will need to write your own software for these projects as any supplied listings will most likely be for PC compatibles.

There are a couple of companies supplying hobby-electronics kits for ST users: Switchsoft (0325-464423) supply a range of I/O ports and associated software that could be used for the light and temperature projects that you mention in your letter; Romulus Data Systems (2 Downs Grove, Basildon SS16 4QL) supply a device that will control equipment that uses IR hand controllers. (Why you should want to dedicate several hundred pounds worth of computer to do what a collection of compact handsets already do quite happily is another question!) As for turning your ST into a driving instructor: there are a number of sets of controls for use with flight simulators that could probably be adapted to do the job, but no suitable software that we know of.

Score Perfect

Britt Johnstone STA 14

I In the February issue you reviewed "Score Perfect", the German scorewriting programme. It certainly looked interesting, although my demo copy wouldn't print.

The programmes you compared it to are in fact not comparable - they are top-end professional software, whereas Score Perfect is more "entry-level". You mention EZ Track and a couple of PD/Shareware sequencers - but they aren't for notation!

There are two main programmes with which I am familiar which are much more comparable, and have the added benefit of being able to incorporate text, chord symbols and lyrics without needing to transfer files into something like Calamus.

"Best buy" as an all-rounder must be Alpha Notator, an "education" cut-down version of Notator, available for £180. (I'll sell you mine for £125!) You can enter music as per Score Writer, and editing is similar with immediate word-processor type adjustment of spacing. The big benefit is the ability to add text: the drawback is that it uses a pretty primitive font and the files can't be transfered into DTP. However, it does a good job and is very easy to use.

The second place (I think) must go to Tiger Cub, further down the market at about £100 or so. Here again, music can be entered via MIDI or mouse. You can enter text and lyrics, but once your midi file has been "translated" into a "music edit" file on screen, there is no automatic adjustment of spacing when you add or delete notes. Well, you get what you pay for, and I think Tiger Cub can give excellent results, with better fonts than Notator Alpha, though with less flexibility.

Third place probably goes to Dr T Copyist Apprentice, available for £70 or so if you look around. This doesn't contain its own sequencer, so if you want to enter music from a MIDI keyboard you have to save a MIDI file from another programme, and import it into Copyist; there you are - good results and nice text but hard work and a bit time-consuming.

Why am I selling Alpha Notator and Copyist Apprentice? Because with the experience gained with them I have decided that it is worth spending £300+ on Notator v3.1. I would recommend a splash in the slightly cheaper programmes before spending that kind of money.

Andy Stockley

Stacy Drives

I 1: Using a hard disk drive with DMA interface.

This may be old news to you, but it wasn't to me! I have at last been able to use my Stacy computers with an additional DMA hard disk drive. A drive with a DMA interface can be connected directly to the Atari computer via the "hard disk" port.

As I understand it, using a hard disk, even a DMA one, has not been possible with a Stacy until recently: certainly, when I bought my machines everyone swore blind it could not be done because of a bug in the Stacy. I tried, failed, and gave up many moons ago. Now that AHDI V5 is on the scene, this has changed the situation.

The excellent Karl (Vorsprung durch Atari) Brandt at Atari Workshop (Tel: 071-708 5755) provided me with the latest AHDI Version 5 utilities and set about installing them.

He first deleted all my existing hard disk utilities including the SYSTEM.SYS file in the root directory of the Stacy's hard disk. He then

started HINSTALL with the additional drive still disconnected and re-installed the Stacy's hard disk. He then copied the SYSTEM.SYS file which comes on the floppy to partition C's root directory, where it was before, finishing off by saving the Desktop.

Next, he powered down, hooked up the other hard drive (Supra 30MB), powered up and simply installed the required partitions (in my case, G-J) and re-saved the Desktop. I can now use the Supra as my backup drive, hooking it up when I need it. The partition floppy symbols G-J appear even when the external drive is not there, but this is no problem.

2: Using a hard disk drive with SCSI interface.

In line with the belt 'n' braces approach, I am also interfacing with an SCSI drive (Syquest 45MB removable hard disk cartridge in a PLI drive).

This requires a DMA-to-SCSI converter unit to be used in line between the Atari and the SCSI drive. You have a choice of two, so far as I am aware: the one that Karl Brandt does is based on the ICD board and has the advantage of being externally powered, which means that it will function even if the SCSI drive does not supply something called "Terminator Power", where one of the SCSI lines is used to send power from the device down the SCSI multicore to wherever it's needed.

Many, if not most, devices do supply Terminator Power, so the DMA-SCSI converter from the friendly people of DAC (Tel: 0784 462175) may be preferable as it takes its power from the SCSI cable: the advantage being that there's no need to fuss about with external powering, but with the downside that if your device doesn't support TP, tough. In my case, DAC kindly modified my PLI drive (see above) so that it would supply TP. (The later PLI's supply it without the need for a mod.)

DAC also supplied partitioning software for the cartridge.

If you go for the DAC Converter, it's worth knowing that if you try to save a file to a write-protected or faulty cartridge, the software provided will not warn you that there's something wrong and you'll think the save was successful (apparently, this is - Atari - normal, though the ICD-based Convertor will cause a message to be displayed in this situation); secondly, Terminator Power is good for cable runs of up to a suggested 3 metres maximum owing to the unavoidable voltage drop along the loom to the DMA convertor.

The price of both DMA-SCSI converters is around £175.

The nice thing is that I can use either the DMA hard disk or the SCSI cartridge drive with the Atari: the partitions we installed on the desktop (G-H) can be used for either drive, and it makes backing-up the Stacy internal hard disk a doddle.

Will Mowat

Spectre GCR

Q As a user of Spectre GCR for about six months I can pronounce myself totally satisfied with the system in all but one respect: printers! Despite all of my efforts to get answers to the following questions I remain ignorant and fustrated. I throw myself at the feet of your knowledgable and experienced contributors seeking guidance.

The question is simple. How do I get an HP DeskJet or HP DeskWriter to work with Spectre?

I have tried the following printers with varying degrees of success:

(i) Apple ImageWriter I from serial port using lead as described in the Spectre manual. Total sucess.

(ii) ImageWriter II as above using 25-pin Din to mini 8-pin lead. Sucess.

(iii) Epson 24-pin printer through parallel port using "the Witch" software interface, Imagewriter LQ selected through 'chooser'. Partial sucess. Result is very slow and ImageWriter LQ only works with some Mac programs. Selecting StyleWriter driver crashes the system.

(iv) HP PaintWriter using various combination of leads. Almost total failure - I get a series of @@@@@'s instead of my text/graphics.

(v) Oki laser in HP III emulation mode through parallel and serial ports using combination of leads. Total failure.

I am wary of investing in an HP DeskJet until I am sure I can get it to work properly. Is the problem do do with the leads I am using - basically a 25-pin Din to mini 8-pin using the ImageWriter connections or is the problem more fundamental?

I have contacted HCS where I bought Spectre. They know even less about it than I do! I have tried writing to Günter Minnerup c/o Atari User. No response as yet. I have faxed Dave Small in the States. Still waiting for a reply.

Surely I am not the first to be faced with this problem. Please help!

Alex Mosedale

Third Coast Technologies

I Since purchasing a Supra 65MB hard drive for my ST in November 1990 from Third Coast Technology, I have tried to format the drive for 65MB using the Supra utilities but I always end up with 60 MB of usable sectors and 5MB of bad sectors. I have continually rung Third Coast to ask them to help me format the drive to its full potential of 65MB, but with no success.

Every time I ring them the person who answers the phone tells me to ring the technical department on 0257 427 058 and when I do the phone just goes on ringing. I then ring Third Coast again and they give the excuse that they must be busy and he will get them to ring me, but they never do; when I ask to speak to the manager I am told he works in the technical department. It gives you the feeling that once Third Coast have sold you something they are not interested in helping with any problems that occur, joining a lot of companies in the Atari field who give bad service to their customers.

I have also written to the Supra Corporation but they refer me to the supplier.

Paul Thomas

● Fortunately, TCT are no longer able to abuse their customers in this way as they are no longer in business. Sadly, TCT continued to be given the 'support' of manufacturers such as ICD and Supra, and magazines that took their advertisements, despite the fact that TCT were repeatedly being sued by unhappy customers. If they had been selling cream cakes they would have gone out of business years ago!

Your Supra drive is simply sub-standard and, ideally, should have been returned to TCT the day you discovered the fault. On reflection it's a good job that you didn't do this, as many customers never saw their drive again and had to battle for a refund. So long as the 60MBytes on the drive that format OK are remaining OK there is no pressing need to do anything. If the drive is performing erratically then it would be wise to swap the SCSI drive for a new mechanism: you should be able to get an 84MByte SCSI drive for around £200.

Piracy Questions

Q We are two students from Hardyes School in Dorset and we are doing a Personal Research Study on Computer Piracy and Software Costs.

If possible could you please send us the following:

1. Your views on Computer Piracy.

2. What do you think are the best forms of protection on software: hardware, manual or on disk?

Richard Buckler and Patrick Shaw

● 1. Whilst remaining strongly opposed to Software Piracy we do feel that it is important for the industry to come to terms with the fact that piracy in the software industry is no different from the problems suffered by music and, to a lesser extent, video industries. To get to the root of the 'problem' you should really be asking Alan Sugar how Amstrad square their 'pioneering' promotion of twin-deck cassette and video units with their responsibility to the music and video industries that supply the 'software' (music and films) without which Amstrad could not sell HiFi units and video recorders. In essence, the real problem is the 'it's OK to copy' culture that has been promoted and legitimised in many ways (including TV adverts) by major players in the electronics industry.

Entertainment software publishers know that this battle is lost: but the 'war' is seen as being winnable. Applications software publishers have more options open to them and are able to continue to sell products in the face of high levels of piracy on the strength of their after-sales support, the need for copious printed

documentation and regular product updates.

2. The current media types are designed for easy copying: tapes and disks are going to look very old fashioned in three to four years' time. The hardware dongle and the 'enter a word from the manual' system are currently the only worthwhile methods of protection. But even these are readily cracked by determined pirates. (We have yet to find a pirated version of Redacteur 3...)

Future media types: ROM/RAM credit cards, cartridges and Compact Disks offer much more protection against piracy, and the manner in which these devices operate will be designed with anti-piracy in mind. Why do you think that software publishers are so keen on CD ROMS, Smart Cards, and consoles that use cartridges?

Stacy PC

Q I need a PC Emulator for my Stacy. Has anyone any suggestions on the best option?

W Lawrie

● The chances are that any PC emulator will fit into a Stacy, the problems will start when you try and put the machine back together again! Contact Compo (PC and AT Speed) and Silica Systems (AT Once) to see if they know of anyone who has succeeded in getting an emulator into a Stacy.

Maccel.cpx

Q I tried using Atari's new control panel, as supplied on a disc mag recently, and could not get Maccel.cpx to work. When I clicked on the box I just got a message saying that I had to run the program first. All the other cpx's work perfectly well. Can you help?

Deborah Pate

● You need to have Maccel.Prg (UTI.125) launched from your Auto folder before this CPX can configure mouse behaviour.

DC SEA

I It has been discovered that DC SEA has a couple of quirks that users have reported, thinking their disks were bad. The disks and the files are fine, so don't panic! Here's what to watch for and what to do:

1) Sometimes DC SEA does not extract all the files in an archive. If you do a verbose listing and more files are contained in the archive than were extracted, simply re-extract to the same directory path. When asked if you wish to overwrite the files already extracted, answer N.

2) For very large files, DC SEA reports that the CRC was bad when extracting the file. The file, however, is perfectly fine, extracts from the archive and runs without problems. (DC SEA is incorrectly reporting a bad CRC... just ignore it!)

Atari Interface Magazine

● These problems can affect both ST Informer and Atari Interface PD compilation disks.

DeskJet Soft Fonts

Q Can I produce a downloadable font for the DeskJet based on the font I designed for a Star LC10 using Fontkit Plus? My copy, version 2, doesn't mention DeskJets at all. And if I can use Fontkit to create a suitable font, what size of RAM cartridge should I aquire for the DeskJet? HP offer no guidance in the manual on the factors which should determine the choice between a 128K or 256K cartridge.

Robin MacEwen

● Fontkit Plus 4 will offer import and export of HP Softfonts along with facilities for downloading these into a DeskJet fitted with a suitable RAM cartridge. A 128K cartridge should be sufficient if you want to download just one font: but with the cost of RAM chips dropping there should be little difference between the prices of the two cartridges and it would be wise to invest in the larger cartridge. Fontkit Plus 4 should be available in October.

FSP3

Q I notice that you use Fleet Street Publisher 3, in part, to produce ST Applications, so you might be able to advise me how I can obtain printer drivers. About two years ago, I up-graded my copy of Fleet Street Publisher to version 3, but, for personal reasons, I have not been able to use it since then. When I did want to use it recently, I discovered that the appropriate printer drivers were not included: by the time I tried telephoning Mirrorsoft, they were no longer trading! (Moral: don't wait too long after purchase to try your software!)

ST Applications, issue 18, suggested that Acclaim at Winchester had acquired Mirrorsoft, but when I telephoned them this was denied: they admit only to having employed a couple of ex-Mirrorsoft staff!

Have you any idea how I can obtain printer drivers for FSP3 for the HP DeskJet Plus and HP LaserJet III printers, as well as Epson LQ850 and Atari SMM804 dot-matrix printers?

Dr. P Gordon Malan

● A LaserJet driver should have been supplied with your copy of FSP3. This driver works fine with DeskJet and LaserJet II printers, and it should also work with a LaserJet III. Oddly, there is also a driver for the Atari SMM804! The files to look for are 9_pin_a.Def and .Deo for the Atari dot-matrix printer, and Laser.Def and .Deo for the HP printers. Check the Read_me file on disk 1 for the location of these files.

FSP3 had an unhappy series of 'launches' which put paid to any chance of it making a credible mark on the ST DTP scene, and so it is quite possible that your copy was shipped without all of the files on the disks.

To clear up the extent to which we use FSP3: we use both FSP3 and PageStream to generate, as IMG files, the headlines used for articles in ST Applications. The pages are laid out using Timeworks Publisher 2. As a result of the lack of additional fonts for FSP3 we use PageStream 2.1 most of the time, and FSP3 is now only used for the front cover.

James still supported

I I am pleased to report that the shareware program James.Acc (the desktop butler) is still being supported. Send your registration fee of $15 (25DM / 500FB) to the following address: Pascal Fellerich, 45 rue des Genets, L-3482 Dudelange, Luxembourg.

Registration brings you version 1.6b and a disk with an assortment of PD utilities, and TOS patches.

Mark Fairweather

Olivetti JP-350

John Shill - Forum STA 15

I I have had some experience with these machines, admittedly connected to a PC and not an ST. Below is a brief résumé of the JP-350. It's done from memory and so probably isn't complete or 100% accurate!

The JP-350 is not a rebadged DeskJet. It does however emulate the DeskJet (Plus, I believe) and will take DeskJet ink cartridges. At least on the PC, it works quite happily with DeskJet (500 and Plus) drivers. The speed and output are all up to the levels of the DeskJet.

Its main problems are that it is bulkier than the DeskJet and it doesn't have as many fonts or emulations. The only built-in font is 'Courier' and the only emulation is DeskJet (Plus). Epson emulation appears to be available at an extra cost.

All of the JP-350's I have seen have had the 'Times Roman' (fontcard E) included in the package. These fontcards don't seem to be compatible with the DeskJet, although the lettering system does.

The JP-350 has just been superceeded by the JP-350S. This machine is almost identical to the JP-350, but has 'Times' and 'Gothic' actually built into the machines as opposed to being separately available on a fontcard. In terms of print quality, speed and reliability, no other improvements have been made.

The JP-350(S) has a paper-in tray of 150 sheets, and a similar-sized output tray. An optional second input tray is available which sits underneath the machine, raising its height by about 2". Alternatively, a tractor feed adaptor can be fitted instead of the second paper tray.

On a final note, although the JP-350(S) will happily work with DeskJet cartridges, the Olivetti branded ones (yellow tops instead of green) will not fit the DeskJet. Careful use of a sharp knife to remove the offending plastic lugs (on a cartridge) will probably solve the problem!

Roland Givan

DESKTOP DISCUSSIONS

Front Cover Disks - Software without Cost?

Complete applications on magazine cover disks are good for users and for the journals' circulation figures, but, asks William Hern, are they good for the industry as a whole?

Quick - who is the largest distributor of ST software in the UK? Virgin Computer Games? Boots? Wrong, it's W.H Smith, the newsagent. Go into your local branch and it's easy to see why - every computer magazine these days is apparently not considered complete unless it has a floppy disk or two taped to its front cover.

The rise of the front cover disk has been meteoric. The pioneer in the field was Amiga/ST Format which right from its launch issue came with a disk. It was quite a gamble at the time - no one was sure whether readers would be prepared to pay an extra pound for the disk. Sceptics claimed that few would be prepared to pay a hefty three pounds for what was, after all, just a magazine, and that once the novelty had worn off sales would fail.

The pessimists were proved wrong and now few machine-specific magazines available in the newsagents would dare to publish an issue without a disk adorning it. With the honourable exception of this magazine, all ST publications have cover disks.

The magazines' thirst for material to put on to the cover disks is insatiable. Both ST Format and Atari ST User use compression to squeeze on average over 1.5 megabytes of software on to each disk. That means that between them, nearly 40 megabytes of software is needed every year. Add to that the demands of ST Action and ST Review for software and you'll have some idea of the size of the problem that faces each editor every month in trying to find enough material to pack a disk.

When cover disks first began, their contents was largely made up of public domain software. Software houses quickly spotted their potential and the demo of some forthcoming game has become a regular fixture on most disks. However in the last two years we've entered a new phase with complete versions of software packages appearing on the disks. At first games were given away but in the last six months the trend has been towards featuring applications software.

From the users' point of view all this nearly-free software is wonderful. In the past few months alone, if you had regularly bought the ST magazines, you would now own at least a word processor, CAD package and desktop organiser courtesy of the magazines, whose combined retail value would be over £200. For an additional outlay of only £3, this seems to be outstanding value for money.

But is it good for the ST market in general? That is less clear cut. One of the reasons for the switch from games to applications software was that games companies discovered that free games were hurting sales. Let's face it - there are only so many games you can play in a year and if you get one or more of them free on a magazine disk, then the number that you buy off the shelves is going to be reduced.

Will the applications market be hit in the same way? It's difficult to guess. The lobby against bundled software say that if a user receives a word processor such as Write-On via a magazine are they likely to want to buy another? Whereas a game's appeal is usually limited, application software can be used for years and only replaced if the user has a change of circumstances which requires new software. Hence supplying free software could hurt the applications sales for years, potentially causing permanent damage to the market.

I don't think it's as simple as that. First, a look at the applications chosen for cover disk treatment shows that almost without exception they are older products with new improved versions now on the market. By giving out the original versions the software companies hope that users will be tempted to upgrade to the latest versions at some point.

Second, are the companies really giving away the software for free? Case in point: Atari ST User sported the wonderful all-singing all-dancing Harlekin utility on the cover of its May issue. While it is the complete version, the magazine only explains how to install it. Proper documentation is a necessity (anyone who can master Harlekin's scrap book unaided should be snatched up by the United Nations and have their unquestionable genius focused on problems of more global importance) and is only available from HiSoft for £19.95.

Application cover disks could even have a beneficial effect on the ST market. What if this free software encourages some of the legions of games only ST owners to experiment with using their machine for more serious purposes? Making users see that the ST can be used for more than just playing games could expand the applications market rather than contract it.

While I am in favour of including software on cover disks, I feel that cover disks have so much untapped potential. Instead of bundling a disk with each magazine, why not put the magazine itself on the disk? I'm aware that there have been disk magazines before (indeed I used to be an occasional contributor to the STuffed disk magazine) but to date they have been little more than simple text readers with provision for displaying screen shots.

What about a disk magazine that utilised the concepts of hypertext so that the reader only had to read exactly what interested them? That included brief snippets of animation, rather than just static screen shots, from software under review? That featured a powerful index command so that articles containing particular keywords or on a specific theme could be found quickly and easily?

Admittedly there are serious problems to solve, such as how to make reading text from a screen as effortless as for paper. But it would be refreshing to see the magazines experimenting to discover just what is possible, rather than merely competing with each other to see who can give away the most expensive piece of software.

William Hern

Programmers' Forum

This month, ST Applications' regular programming column includes letters from readers on debugging interrupt code and the format of .PRG files.

Debugging interrupt code

Long-time readers of Programmers' Forum may remember some helpful advice offered by **Jonathan Lawrence** of London SW12 on interrupt programming. Shortly after his letter was printed in STA 9, Jonathan wrote again with a clarification of one of the earlier points. After being mislaid for a while (a pile of Programmers' Forum letters got mixed up with a stack of other papers for a few months!), here it is.

Seeing my words in print made me look a bit closer at them - and wonder whether they were really right - and I'm afraid my second explanation (about the function of vblsem) isn't entirely.

Decrementing vblsem isn't usually necessary to prevent further vblank interrupts, since on entering the vblank interrupt the IPL is raised to 4, which automatically inhibits further vblank interrupts (the IPL would have to be less than 4 for the 68000 to notice them). Only if a particular vblank routine lowered the IPL would vblsem be called upon to function as I suggested.

My confusion arose out of using Hisoft's MonST, which, when invoked, lowers the IPL (to 3 - or lower if hblank is enabled?) irrespective of what the status register display indicates. While it has to do this - to prevent the machine locking up when attempting to debug with an IPL of 6 or 7 - it can cause problems when tracing code through an interrupt.

When MonST is called up during an interrupt (either deliberately with a breakpoint/ "ILLEGAL" instruction, or accidentally with some error trap) its lowering of the IPL can allow certain interrupts to recur (and cause the supervisor stack overload that I mentioned):

The MFP IPL 6 interrupts won't recur in this way until the relevant interrupt-in-service bit has been cleared.

Standard vbl routines are protected from this problem by the action of vblsem. If, however, you took over the vblank interrupt itself (vector at $70) then attempting to examine the operation of your code with MonST would result in a pile-up on the supervisor stack as MonST repeatedly reenabled the vbl interrupt by lowering the IPL from level 4.

You might get the problem with hbl interrupts - I haven't tried.

If you really need to "single step" through any such interrupt code, then the particular section of interest would need to be protected with a device similar to vblsem (or just a flag would do) that allowed it to be entered only once at a time - as shown below. [Listing 1]

If you set a breakpoint (or ILLEGAL instruction) in code that runs off the keyboard interrupt (this handles keyboard, mouse and joystick events) then the machine will freeze when the code comes to be examined by MonST. This is because MonST needs to receive keycodes in order to do anything, but can't because the relevant MFP interrupt-in-service bit is still set (it is not enough that the IPL has been lowered below 6).

To use MonST to single step such code you could clear the relevant interrupt-in-service bit before your breakpoint, and surround the relevant section of code with one-at-a-time protection code (as explained above) - only allowing the interrupt to recur could mess up the rest of the operating system's keyboard interrupt routines.

Any extra code inserted to permit debugging is best conditionally assembled. This allows you to switch between compiling test versions and fully working versions by changing the value of a single variable.

Another implication of MonST's lowering of the IPL is that any "atomic" code (with IPL set to 7) would cease to be "atomic" while paused in MonST.

Thanks to Jonathan for that advice. Debugging interrupt code is definitely one of the trickier aspects of assembly language programming. One often ends up doing the debugging with a listing of the program and a pencil.

GEMDOS program formats

In another letter from the ill-fated pile, **Simon Kinahan** from Crieff in Perthshire writes:

I was very interested to read Martin Hagelin's letter in issue 10 of ST Applications as I too have experimented with running programs from desk accessories and other possible short cuts to task switching on the ST. None of these have worked as I have experienced similar problems to Martin.

As I cannot get the operating system to load programs for me, I have decided to try doing it myself but sadly I do not know the file formats for ST programs and desk accessories, do you?

One other thing, I have a copy of the new XCONTROL.ACC and I would like to write some .CPXs of my own. How can I do this?

I guess the first thing to say is that it is probably not possible to implement full task switching in this way. Desk accessories have an odd relationship to the operating system that complicates fundamentals like ownership of memory and so on. This was discussed in some detail in the *Programmers' Forum* of STA 2. For task switching, you would be better off looking at something like the operating system enhancement MiNT (a PD program) or waiting for Atari's new MultiTOS.

However, I can provide some help on the subject of loading executable files. The best method for doing this depends somewhat on what you want to do with the file. If you want to load it and eventually run it, the only good way to do this is using the operating system call Pexec. If the file is to be loaded in and analysed, as for example a disassembler might need to do, it is probably easiest to write some custom code to do the job.

Using the operating system

The operating system function for loading programs is the GEMDOS call Pexec. This is rather a complicated function and has been improved over time as newer TOS versions have been released, so we must be careful in using it. The definitive source for information on Pexec is an Atari document called The Pexec Cookbook, which forms part of the DocSupport package of documentation (Volume I; see STA 16 for review).

The basic form of the Pexec function call is

```
Pexec(mode,program,cmdline,environment);
```

where *mode* is a number which specifies what operations are to be performed by GEMDOS, *program* is a pointer to a string which gives the path and filename for the GEMDOS executable file to be processed. *cmdline* is a pointer to a command line string to be passed to the executable. This should be in a rather odd format: the first byte gives the length of the string, and the subsequent bytes (a maximum of 125) contain the null-terminated text. The

final argument is a pointer to an environment specification. This topic will be covered in a forthcoming Programmers' Forum, but for simplicity, one can pass NULL (0), and GEMDOS will use a copy of the current environment.

The most familiar use of Pexec is to load and run a program. This is done by calling the function with a mode argument of 0. The memory for the new program (usually called the 'child program') to load into is taken from the free memory pool. Pexec does not return to the calling program (the 'parent') until the child terminates with Pterm or Pterm0. When this happens, the child's memory is returned to the free memory pool.

However, it is possible to exert rather more control over the process by using other Pexec modes. Calling Pexec with a mode argument of 3 causes GEMDOS to load in the executable file but not to run the program. In this case, Pexec returns with a pointer to the basepage of the child program. For those who are new to this field, the basepage is a 256 byte block of memory that GEMDOS uses to store various bits of 'housekeeping' information about a program. It normally occupies the 256 bytes just before the start of the program's code area. See the Programmers' Forum columns in STA 2 and STA15 for more details.

At this point, the parent has the opportunity to alter the child before executing it. This might be useful if the child program needs patching to work properly. To run the already loaded child program another Pexec call must be made, this time with either mode 4 or mode 6. For either of these modes, NULL should be passed for the second and fourth arguments, and the address of the child's basepage as the third argument. The child is started, and control only returns to the parent when it terminates.

The differences between mode 4 and mode 6 are rather abstruse, but alter the way GEMDOS manages the child's memory. Put simply, if a child is started with mode 4, when it terminates, the parent will have to free the memory it occupied. Furthermore, any memory that the child obtains using Malloc, and does not free with Mfree, will be unavailable to the parent. This awkward behaviour led Atari to introduce mode 6 in TOS 1.4: in this case, GEMDOS automatically frees the all of the child's memory blocks upon termination. Loading a child program with mode 3 and then starting it with mode 6 is equivalent to loading and running it with mode 0.

A fragment of C code showing how these calls might be used is given in Listing 2. The code is complicated by the need to use mode 6 if it is available (TOS 1.4 or later), but yet to remain compatible with earlier versions of TOS by using mode 4 if not.

The executable file format

To write one's own program loading code, it is necessary to take account of the executable file format. Fortunately, this format is well documented and reasonably straightforward. The same format is used for .PRG, .TOS and .TTP files. Figure 1 shows the basic structure. The first block is the program header. This is 28 bytes long, and contains important information about the program. A brief introduction to this block was given in STA 15; the full specification is in Listing 3.

Following the header, there are the bytes making up the TEXT (executable code) and DATA segments of the program. These are the sections that make up the program proper, and usually occupy most of the executable file.

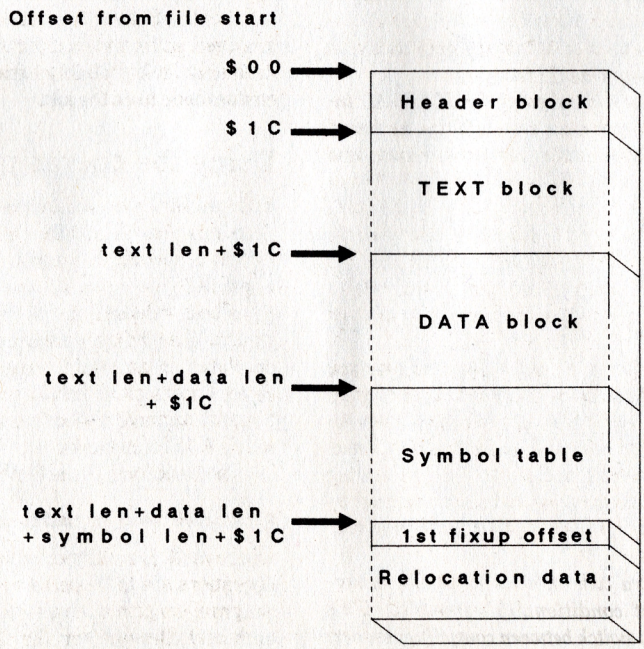


Figure 1 The overall structure of GEMDOS executable files. Dotted lines indicate variable-length blocks.

After this, some program files have a block of data containing debugging information - the symbol table. This is used by debuggers like MonST to attach meaningful names to subroutines in assembly-language listings. The format of the information in this block is variable, depending on the compiler or assembler system used to create the program. The most common format is the 'DRI format'. In this, the symbol table is made up of 14 byte entries. The first 8 bytes specify the name of the symbol, the next two contain flags denoting the symbol type, and the final four are a longword which is the symbol value.

The symbol type is a bitmap that gives information about the symbol. Commonly found bits include: 0x0100 = BSS symbol, 0x0200 = TEXT symbol, 0x0400 = DATA symbol, 0x8000 = defined symbol, 0x4000 = symbol defined by EQU statement.

Only having eight characters for labels is rather restrictive. A much more useful symbol table format is found in programs created using Lattice C. In this format, space for longer names is produced by using two 14 byte symbol table entries for each label. This extended format is signalled by a value of $48 (ASCII 'H') in the low byte of the symbol type.

For those who wish to explore symbol tables, Listing 4 is C source code for a quick program to print out the contents of a program's symbol table. It understands both DRI and the extended Lattice C formats. If anyone manages to decipher the symbol formats produced by other compiler systems, do please write in with the information.

The last block in a GEMDOS executable file is the relocation table. This is used by GEMDOS to modify the program after loading into memory. On older home computers like the Spectrum, machine code programs were designed by the programmer to be loaded and run at a specific position in memory. Things are done differently on the ST: the operating system decides where a program is to be positioned in memory. A program may well find itself in different parts of memory from one execution of the program to the next. In order to achieve this position-independence, all program files are stored on disk as though they were going to be loaded at address $0, together with a list of addresses of places in the program which need to be altered to allow a different start address to be used. This list is the relocation table.

The basic rules governing the operation of the table are that only longwords can be altered to reflect the position of the program, and that these must be word-aligned. The first entry in the relocation table is a longword which indicates the position of the first place in the program that needs altering. The position is expressed as an offset from the beginning of the TEXT segment. Subsequent entries in the table are single bytes that give the distance to the next position that needs fixing up. A byte of $00 marks the end of the relocation table. Bytes of $01 are treated as special cases: they indicate that the next position lies at least 254 bytes further on. No other odd number bytes should be found in a relocation table.

An example C function showing how to use

the relocation table to fix up an executable file is given in Listing 5. The function also illustrates how to navigate one's way around the program file using the data in the 28 byte header block.

It is possible to write truly position-independent code on the ST. Such programs will not need any relocation tables. An empty table can by indicated in one of two ways: either by setting the header flag ABSCODE to $FFFF, or by making the longword at the beginning of the relocation table NULL. The latter method is recommended by Atari for better compatibility with early versions of TOS.

One last point, desk accessory files have the same format as program files, but that is just about the only resemblance. To quote the Pexec Cookbook on the subject:

Although their files have the same internal structure as executable files, they are not treated as executable files.

You have been warned!

With regard to CPX files, I hope to present some details later this year. If anyone has any information on the subject that they would like to share, now would be a good time to send it in.

Next month

Next month Programmers' Forum will print more questions and tips from readers' letters. Keep the letters coming in - the more we receive, the better the column gets ! Hints on any subjects, or questions about programming problems should be sent to the address below. All contributions, no matter how simple or advanced, are most welcome. Please include your address on the letter, so I can get back to you if anything in your contribution is unclear. E-mail addresses are useful too.

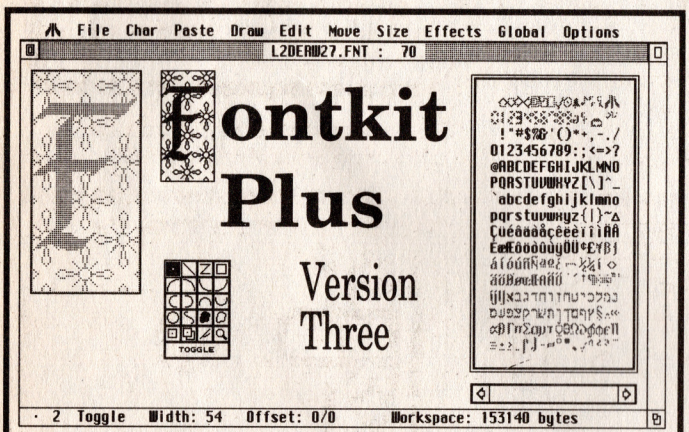
Please send a disk if there are large chunks of text or ASCII source code: I have no time to retype lots of material. Naturally, disks will be returned if an SAE is included.

Jon Ellis
Programmers' Forum
29 Ashridge Drive
Bricket Wood
St Albans
Herts. AL2 3SR

```
**
** Listing 1
** Programmers' Forum STA20 (August 1992)
**
** Code fragment from Jonathan Lawrence, indicating
** one method for debugging an interrupt handler. Uses
** the little-exploited tas instruction to test and set
** a memory location in one atomic instruction.
**

TESTING   EQU       1                   Set to 1 for testing

; The interrupt code is entered here...

; If the interrupt is part of a chain, uncomment the following
; three lines to support the XBRA protocol.
;          dc.l      'XBRA'
;          dc.l      'myid'
;old_vec   dc.l      0

interrupt_routine:

          IFNE      TESTING
          tas.b     test_flag           Already in interrupt ?
          bne       skip_code           Skip on if not.
          illegal                       MonST to stop here
          ENDC

; The interrupt handling code to be debugged goes here...

          .
          .
          .

          IFNE      TESTING

; Clear flag on leaving interrupt; don't single step or set
; breakpoints beyond this point!

          sf        test_flag

skip_code
          ENDC
          rte

; If using XBRA, replace the rte with the following two lines
; to pass the interrupt call onto the next handler.
;          move.l    old_vec(pc),-(sp)   Do indirect jump to the old
;          rts                           handler code.

          IFNE      TESTING
test_flag ds.b      1
          ENDC

/*
** Listing 2.
** Programmers' Forum STA 20 (August 1992)
**
** Code fragment showing how to use Pexec modes 3
** 4 and 6 to load and run a program in separate
** operations.
**
** Compiler system: Lattice C v5.51
** Compile options: Phase 1: -cargfku Phase 2: -ms
** Link with C.O and LC.LIB
** Written on 20th May 1992
*/

#include <basepage.h>
#include <osbind.h>
#include <portab.h>

/*
** Define modes of operation for Pexec
*/

#define LOAD_AND_GO     0
#define LOAD_ONLY       3
#define GO_OLD_VERSION  4
#define GO_NEW_VERSION  6

/*
** Function to load and execute a GEMDOS program,
** allowing a chance to fiddle with the code in memory
** before execution.  Where possible, Pexec mode 6 is
** used to run the program.  The arguments are pointers
** to the full filename of the program to be run,
** and the command line data, already in the special format.
** The return value is the result of its execution or
** a GEMDOS error code from the loading.
**
** Usage:   result = run_program(pathname,command_line);
**
**          int result, run_program(char *,char *);
*/

int run_program(pathname,cmd)

char *pathname, *cmd;

{
    int result;
    BASEPAGE *bp;
    unsigned short gemdos_version;

    result = Pexec(LOAD_ONLY,pathname,cmd,NULL);    /* Use current environment  */
    if (result < 0)
        return(result);                             /* Quit if load fails       */
    bp = (BASEPAGE *)result;
    hack_program_up(bp);                            /* Alter program as required*/

/*
** Find out if mode 6 is available - Atari approved method
** from Pexec Cookbook.  Mode 6 is available in TOS 1.4
** and later (GEMDOS version 0x15).
*/

    gemdos_version = Sversion();
    if ((gemdos_version & 0xFF) > 0 || (gemdos_version & 0xFF00) >= 0x1500)
        result = Pexec(GO_NEW_VERSION,NULL,(void *)bp,NULL);
    else
        {
        result = Pexec(GO_OLD_VERSION,NULL,(void *)bp,NULL);
        Mfree(bp->p_env);                           /* Clean up child's memory  */
        Mfree(bp);                                  /* as far as possible       */
        }

    return(result);
}


**
** Listing 3.
** Programmers' Forum STA 20 (August 1992)
**
** The format of the GEMDOS executable file header
** block.
**

Offset  Size        Meaning

 $00    Word    Magic number, always set to $601A for GEMDOS program.
```

```
  $02    Long    Length of TEXT segment in bytes.
  $06    Long    Length of DATA segment in bytes.
  $0A    Long    Length of BSS segment in bytes.
  $0E    Long    Length of symbol table in bytes.
  $12    Long    Reserved
  $16    Long    Program flags - see below.
  $1A    Word    Relocation table flag ABSCODE: $0000 if there is a
                 relocation table, non-zero if not.  Not supported
                 by early versions of TOS.

The program flags longword has the following entries defined at present:

Bit  0          FASTLOAD bit: If set, only the program's BSS is cleared
                before execution; otherwise the whole transient program
                area (TPA) is cleared.  Introduced in TOS 1.4.
Bit  1          TT only.  If set, program can load into TT RAM.
Bit  2          TT only.  If set, Malloc calls from the program may
                be satisfied from TT RAM.

Bits 28-31      TT only. These four bits indicate how much TT RAM the
                program would like to have if it is loaded into TT RAM.
                This is a request that GEMDOS may or may not grant. The
                amount of memory requested in this way is calculated as:
                  program's TEXT + DATA + BSS + 128K + 128K * (flags >> 28)


/*
** Listing 4.
** Programmers' Forum STA 20 (August 1992)
**
** Quick program to dump out the contents of a
** program symbol table.
**
** Compiler system: Lattice C v5.51
** Compile options: Phase 1: -cargfku Phase 2: -ms
** Link with C.O and LC.LIB
** Written on 20th May 1992
*/

#include <stdio.h>
#include <stdlib.h>

#define HEADER_SIZE 28
#define MAGIC_WORD  0x601A

#define SYMBOL_SIZE 14

#define TRUE        1
#define FALSE       0

/*
** This type should correspond to a 16 bit
** quantity: alter as required for your compiler.
*/

typedef unsigned short WORD;

/*
** Global variables.
*/

WORD header[HEADER_SIZE/sizeof(WORD)];

/*
** Function prototypes.
*/

int main(int,char **,char **);
void dump_symbols(char *,unsigned);
void end_prog(char *);


/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    FILE *fp;
    unsigned text_size, data_size, bss_size, symbol_table_size;
    char *buffer;

    printf("\033E\nSymbol table dump\n");
    printf("Written 20th May 1992, Jon Ellis\n\n");
    if (argc != 2)
        end_prog("Usage: dumpsym <executable_file>\n");
    if ((fp = fopen(argv[1],"rb")) == NULL)
        end_prog("Open failure on input file\n");
    if (fread(header,HEADER_SIZE,1,fp) != 1)
        end_prog("Read error on input file.\n");
    if (header[0] != MAGIC_WORD)
        end_prog("Input file is not a valid GEMDOS executable !\n");
    text_size = *(unsigned *)(header+1);
    data_size = *(unsigned *)(header+3);
    bss_size = *(unsigned *)(header+5);
    symbol_table_size = *(unsigned *)(header+7);

    printf("Text section: %u bytes\n",text_size);
    printf("Data section: %u bytes\n",data_size);
    printf("BSS section: %u bytes\n",bss_size);
    putchar('\n');
    if (symbol_table_size == 0)
        end_prog("Program has no symbol table.\n");
    printf("Symbol table: %u bytes\n",symbol_table_size);

    if ((buffer = (char *)malloc(symbol_table_size)) == NULL)
        end_prog("Cannot allocate enough memory for symbol table !\n");
    if (fseek(fp,text_size+data_size,SEEK_CUR) == -1)
        end_prog("Seek to symbol table failed.\n");
    if (fread(buffer,symbol_table_size,1,fp) != 1)
        end_prog("Read error on symbol table.\n");
    fclose(fp);
    dump_symbols(buffer,symbol_table_size);
    free(buffer);
    end_prog("");
    return(0);
}


/*
** Function to quit the program with an
** message to the user.  After waiting for
** a keypress, exit() is called.
**
** Usage:   end_prog(text);
**
**          void end_prog(char *);
*/

void end_prog(text)

char *text;

{
    printf("%s\nPress RETURN to continue ",text);
    getchar();
    exit(0);
}


/*
** Function to actually write out the list of
** symbols.  The arguments are a pointer to the
** symbol table in memory and its size.  There
** are no return values.
**
** Usage:   dump_symbols(buf,len);
**
**          void dump_symbols(char *,unsigned);
*/

void dump_symbols(buf,len)

char *buf;
unsigned len;

{
    unsigned f, g, address, hisoft;
    unsigned short type;
    char buffer[32];

    if (len % SYMBOL_SIZE)
        printf("Warning: Symbol table not a whole number of symbols in length\n\n");
    hisoft = FALSE;
    for (f=0; f<len; f+=SYMBOL_SIZE)
        {
        if (hisoft == TRUE)
            {
            for (g=8; g<22; g++)
                buffer[g] = *(buf+f+g-8);
            hisoft = FALSE;
            }
        else
            {
            for (g=0; g<8; g++)
                buffer[g] = *(buf+f+g);
            type = *(unsigned short *)(buf+f+8);
            address = *(unsigned *)(buf+f+10);
            if ((type & 0xFF) == 'H')
                {
                hisoft = TRUE;
                continue;
                }
            }
        buffer[g] = '\0';
        printf("%-30sType: $%04X  Address: $%08X\n",buffer,type,address);
        }
}

/*
** Listing 5.
** Programmers' Forum STA 20 (August 1992)
**
** Code fragment showing how to process the relocation
```

```
** data to fix up a GEMDOS executable program.
**
** Compiler system: Lattice C v5.51
** Compile options: Phase 1: -cargfk Phase 2: -ms
** Link with C.O and LC.LIB
** Written on 20th May 1992
*/

/*
** Define the symbols used...
*/

#define TRUE        1
#define FALSE       0

/*
** Offsets into program header block...
*/

#define PRG_MAGIC       0x00
#define PRG_TEXTLEN     0x02
#define PRG_DATALEN     0x06
#define PRG_BSSLEN      0x0A
#define PRG_SYMLEN      0x0E
#define PRG_RESERVED    0x12
#define PRG_FLAGS       0x16
#define PRG_ABSFLAG     0x1A

#define PRG_HEADER_SIZE 28

/*
** Function to relocate a GEMDOS executable file.
** The argument is a pointer to the start of the
** file data in memory (the beginning of the header
** block).  The return value is TRUE if the file was
** fixed-up correctly, FALSE if there was some error.
**
** Usage:   result = fixup_program(image);
**
**          int result, fixup_program(unsigned char *);
*/

int fixup_program(header)

unsigned char *header;

{
    unsigned long text_size, data_size, symtab_size;
    unsigned long *relocator;
    unsigned char *reloc_table;

    text_size = *(unsigned long *)(header + PRG_TEXTLEN);
    data_size = *(unsigned long *)(header + PRG_DATALEN);
    symtab_size = *(unsigned long *)(header + PRG_SYMLEN);

    if (*(unsigned short *)(header+PRG_MAGIC) != 0x601A)
        return (FALSE);                 /* Error if not GEMDOS program  */
    if (*(unsigned short *)(header+PRG_ABSFLAG) != 0)
        return (TRUE);                  /* No relocation table !        */

    reloc_table = header+text_size+data_size+symtab_size+PRG_HEADER_SIZE;
    if (*(unsigned long *)reloc_table == 0L)
        return (FALSE);                 /* No relocation table !        */
    relocator = (unsigned long *)(header + PRG_HEADER_SIZE +
                                    *(unsigned long *)reloc_table);
    reloc_table += sizeof(unsigned long);
    while (*reloc_table)
        {
        if (*reloc_table == 0x01)
            relocator += 254;
        else if (*reloc_table % 2)
            return (FALSE);             /* Cannot have odd-value bytes. */
        else
            {
            relocator += *reloc_table;
            *(relocator) += (unsigned long)(header + PRG_HEADER_SIZE);
            }
        reloc_table++;
        }
    return(TRUE);
}
```

from the ST Club
Price: £19.95

Major Features of this powerful and sophisticated font editor include:

- ❑ Font Format Conversions from Signum, Calamus, Degas, Macintosh to GEM, and from GEM to Signum;
- ❑ Global Effects: Shadow, Shade, 3D, Contour, Pattern, Lighten, Thicken, Slant, Smooth;
- ❑ Grid Edit facilities: freehand, straight line, geometric shapes, bezier curve, nibs, block move and block copy, fill, zoom;
- ❑ 256-character Buffer;
- ❑ Show font to screen and Print font to paper;
- ❑ Re-scale font by point size, by resolution, and by a combination of the two;
- ❑ full keyboard shortcuts.

'FontPac Plus' Gem Fonts

Derwent Set

The latest set in the FontPac Plus series is now available: the calligraphic typeface "Derwent", based on the 'Foundational' hand.

This set of fonts comes in three different printer resolutions:

- ☞ 180dpi - standard resolution 24-pin (12 fonts from 10 to 45 point)
- ☞ 360dpi - high resolution 24-pin (10 fonts from 7 to 23 point)
- ☞ 300dpi - laser or inkjet (12 fonts from 6 to 28 point)

3D Effect

Each set has associated screen fonts in both high and medium resolution, and there are at least two 'special effects' fonts.

To order, please use the following codes:

- ☞ 180dpi - Q1 : B
- ☞ 360dpi - Q2 : B
- ☞ 300dpi - L2 : B

Price: £9.95
from the ST Club

The fonts are supplied in GST compressed format, compatible with *Font Expander;* a utility to un-compress them is also supplied.

Contour **PATTERN**

CAD Column

Joe Connor provokes programmers and explores Megapaint II and QuickCAD, two unusual CAD offerings.

Regular readers may have noticed coverage of Mac and PC products recently. What particularly impressed me was the quality of the utility software available.

For example, where are the nearest ST equivalents of the following famous utilities?

After Dark or ***Pyro*** screen savers; these things sell by the sackload. Is Boing really the best we can offer?

Disk Express or ***XTree Gold***, hard disk management software; defragments my Spectre partitions: brilliant, but what about the Atari partitions, DLII?

Stepping Out II, virtual screen; here the ST has the excellent PD offerings Monster and BigScreen. However, Stepping Out really is miles ahead in terms of usefulness, running as a fully configurable desk accessory.

If you know better, let me know. Come on, all you Programmers' Forum readers, obsessed with tedious traps and graphic file formats: do us all a favour! Send your comments, insults, completed software, etc., to:

65 Mill Road, Colchester CO4 5LJ

QuickCAD v1.08

QuickCAD is extraordinary: once installed as a desk accessory it combines simple CAD functions with features usually found in graphics packages. Best of all, V1.08 is Freeware.

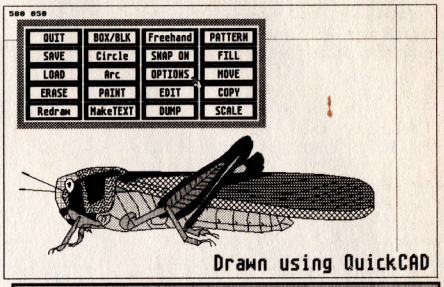
Activating QuickCAD from the Desk menu simply changes the mouse pointer into a crosshair, and that's it: the current application (or desktop) remains on screen. The advantage is that QuickCAD can be used to trace over anything on the host screen, manually vectorizing it in the process. After the screen is Redrawn the host screen is cleared to reveal the tracing.

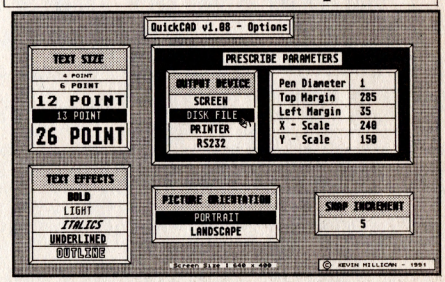
QuickCAD is certainly different. Even the main menu block is accessed by the unusual combination of holding down the right mouse button and tapping either the left button or the CLR/HOME key. The range of drawing functions provided is limited, but with a little ingenuity complex drawings can be drawn. The Arc function is quirky to say the least; I thought I had seen every conceivable way to draw an Arc, until QuickCAD. Even the author, Kevin Millican, says the best way to understand it is to try it!

Drawings can be saved as Degas .PI? or .IMG graphic files or QuickCAD .QUI format vector files. ASCII output provides a possible route to other CAD software although some additional work with a text editor will be necessary.

Conclusion

The author has put a great deal of thought into QuickCAD and challenged many usual conventions. The limited range of drawing tools and the omission of any view controls make QuickCAD more suitable as a partner to your main CAD program. All CAD enthusiasts should take a look at QuickCAD.



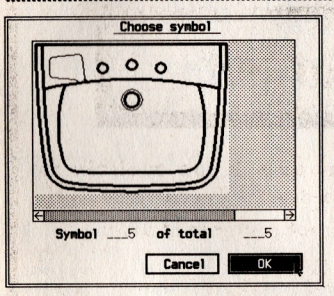


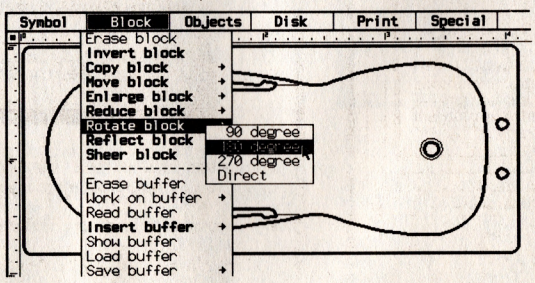
Top: All QuickCAD functions are accessed from the pop-up menu box.

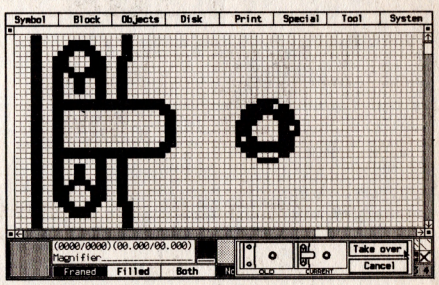
Above: The Options dialog box configures most preset values.

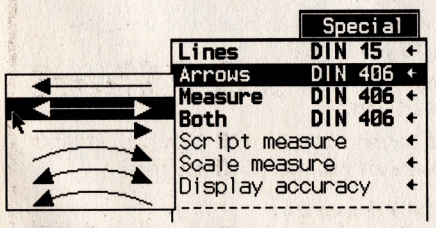
Product:.....QuickCAD V1.08
Supplier:.....ST Club disk DRG. 44
System:.....Monochrome, medium resolution and Monulator supported. The documentation mentions BigScreen support but I could not get QuickCAD to work with it, nor with MonSter or the Reflex graphic card.

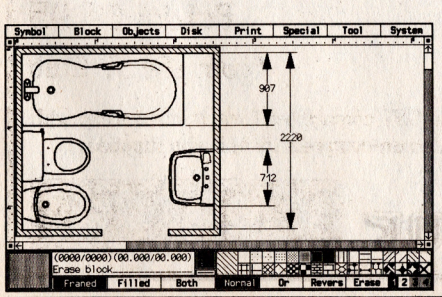
The line that went astray in issue 19: "...but between...*a Mac and a TT*."











Making the Most of Megapaint

Most Atari enthusiasts use at least one graphics package, and although these may not be as flexible as true CAD packages they are perfectly adequate for simple design tasks. Megapaint II, from Silica Systems, is particularly suitable.

Above left: Megapaint provides CAD-like Symbol libraries which enable components to be loaded and previewed before insertion.

Above: Using the Block functions components can be manipulated in a variety of ways. Functions which change the size of the block often result in jagged edges, but Rotate does not suffer from this problem; here the bath is rotated to position the taps at the left-hand end.

Above right: Using the magnifier, the tap was drawn by editing individual screen pixels using the mouse. Vector-based CAD software does not do this and the tap would be constructed using arcs and lines.

Left: Using the tools provided by Megapaint in its Special menu drawing dimensioning is easy and conforms to the relevant standard. The functions used here can all be drawn manually using other packages.

Below left: The final design ready to export to DTP or output directly. The print quality from Megapaint using a Star 24-pin dot matrix and Atari SLM 804 laser is excellent.

Classified Adverts

Classified adverts are free to subscribers.

Please use the form on page 58.

Contacts

Go players and anyone else trying to learn Modula 2 and struggling, please contact Richard Thompson. 79 Mayor's Road, Altrincham, Deshire, WA15 9RW. (21)

For Sale

STFM with 1 Meg Ram, 720K Int. FD + Ext. 720K FD. SM125 B/W Monitor, spare Mouse (new), Microtext Adaptor with Share Master Software. Commodore 1701 Colour Monitor (Low Res) Also works with Microtext as TV. £400 or may split. Also loads of Mags, Progs & Books. Ring Bernard on 0962 78619 (Eves/W.E). (20)

Atari Printing Service. Timeworks DTP; 25 pence per page. 1st Word Plus; That's Write; ST Writer; Public Domain TEXT Files; Shareware Manuals; 10 pence per page. System in use is a 1 Mb ST driving a Hewlett Packard Deskjet 500. Contact: Paul Cooper, 432 Milwards, Harlow, Essex. CM19 4SR. (20)

Signum 2 Document Processor. Master Disks and Manual Boxed. £80.00. Contact Jim (0333) 429835. (20)

DTT, Copyist 2 & Copyist Professional, brand new and unused. Also Steinberg Editor for Proteus 1 x 2 (new, incl manual and dongle) any reasonable offers. Terry Dwyer 0509–412076. (20)

1040 STFM TOS 1.0 (USA) plus SF314 1 Meg Drive, both 110v + transformer and leads; UK 520STM TOS 1.0, Philips CM8833, Lattice C Version 5, STOS, STAC. Lots of original games, Degas Elite, Microtime Clock Card. Offers? Call Dave 0446 795266 (21)

SSirius 600k, 20mb HD. 1.4mb floppy, Z80 card, opto–coupler, DAC/ADC, green Monitor, CPM/MSDOS, much professional software, all technical manuals. c.£150. Princeton Real–time FFT 512 point 16bit 16ms analyser. (interface to Sirius) Cost £6000 c.£100. Yamaha CX5M computer with full size k/b and all music programmes, cartridge. £60. Dot Matrix printers: Epson FX80 (£60), Citizen 120D (£40), Seikosha SL89–A1 24–pin (£100), 1040STFM £200. STE TOS 1.6 (2 rom), STFM 4–SIMM expansion kit, (2x256k STE SIMMS), Timeworks 2 (new, unregistered), £50, Prodata + Protext 5.53 (inc French dic/thes.) £60. – Telephone: Cambridge (0223) 249 889. (21)

Still available, the following ST games, all originals with manuals: Elite, Corruption, Jinxter, Castle Master, Life and Death, Conflict Europe, Red Storm Rising. Call S. O'Connor on 081 798 5435 after 6.30pm. Each game £10. (26)

Timeworks 2.0a £50, KWord 3, KGraph, First Basic, Stac, Klax, Operation Stealth, £5 each, Uninvited, Kid Gloves, Bombuzal, Macadam Bumper, Impact, G–Nius, Flipside, Orbiter, Teenage Queen, £3 each. Also, members wanted to join small ST User Group in South Devon. Contact Keith Harris 0626– 62271 Evenings & Weekends. (20)

Fleet Street Publisher 3 for outline and GDOS Fonts – £80. Headline, Fontmake and STAD – Combined price £70. Headline makes Large Headings (inc. IMG) Fontmake modifies Headline and Signum Fonts, also makes fonts from GDOS fonts and images (PI3 and PAC). STAD–Drawing/Editing facilities for Degas, Pic, Pac and Signum, also 3D drawing. Tel. 0923 266636. Evenings. (20)

Atari SM124 Monitor, Perfect working order, only £60. Also Mouse £10, Buyer collects. 0329–46803 (Fareham) ask for Mandy. (20)

C–Lab Notator Sequencing Software, Dongle and Manual £200. Phone 081–883–9767. (20)

Mega 4 ST, SM124 Monitor, Supra 30 Meg Hard Drive – £600. Atari SLM804 Laser Printer £500. Phone 0992–586003. (21)

Cyber Studio, Cyber Control, Cyber Paint V2, Microbot Disc, Architectural Disc, boxed with manuals, £100. ono. Will split. Degas Elite, Quantum Paint, Hyperdraw, Prosprite Designer, boxed with manuals £30 the lot. Atari SM124 Mono Monitor, 1 year old £100. ono. – Bob Craik, Dornoch, Sutherland, Scotland (0862) 810702 after 7.00pm. (20)

STFM 1Meg D/S Drive £200, Cumana D/S Drive £30, Timeworks DTP £25, SwiftCalc £20, DataManager Pro £15, Turbo ST £15, G Plus + £15, First Word Plus £30, Knife St £15, Disector £10, All VGC. Tel. Alan 0203 33 3334. (20)

Protext 5.5, £85. Superbase Personal £15. Rombo complete colour solution (2 months old) £110. Tel:– Soton (0703) 293418. (21)

Timeworks Desktop Publisher (V1) £15, more than 10 disks of GDOS Fonts £12. Phone Ken 0708 723956 (Romford). (20)

Lattice C V5. Three Volume Manual Set, 7 disks: The Ultimate C Programming Tool, Make me an offer. Call Peter on 031441 7952. Also STOS – £7, Quartet – £20 ono, That's Write V1.24 – £25, Hyperdraw – £7, Gamemakers' Manual – £7, Concise Atari ST 68000 Programmers' Reference Guide – £10. (22)

8 Packages for £30, ST Word, ST Calc, ST–Basic, ST–Graph, First Basic, Hyperpaint 2, STAC, and Prince. Total RRP over £250, absolute bargain. Call Peter on 031 441 7952. (21)

1040 STFM – £195, unregistered FSP3 £85, lots of other original software for sale or exchange. Phone Paul on 0268 –774089 any day after 2 p.m. (21)

Swiftcalc V2.0 £15, Easytext Plus £7, Abacus Chartpak £20, K–Comm V.20 – £10, Robtek Easycalc – £5. All boxed with manuals. S.G. Stead, 38 Lomond Road, Hemel Hempstead HP2 6PA. (21)

Prospero C compiler and source level debugger – £35. Prospero Workbench (for all Prospero languages), includes Make, CLI, and Resource toolkit – £30. Metacomco Lisp – £30. All fairly recent versions. Phone: 0738–37165 (evenings). (21)

Signum II Original, boxed complete with large letters and driver for DeskJet 500. £50. Phone Paul Evans 0743 231552. (22)

Protext V.5 for Atari ST/TT Boxed with manuals £75.00 ono. Telephone Tony Watson on (0532) 531960. (21)

Write On – £15, MS–Windows V3.0 – £20 – all original disks and manuals. Ring 0372 376847. (22)

PD swap – all you need is a disk, send all PD to Darren Burks, 134 Albany Road, Lymm Chesh. WA5 9LP. Please enclose a SAE. (20)

Authorware

If you would like to see your software featured in the ST Applications Authorware column please send us a review copy of the software and a rough outline of the advertising copy you would like to be printed.

RAE Morse Test

Selectable letter/number groups, thinking time, note pitch, morse generation from keyboard for CQ; plus save to disk, etc. Instruction manual and disk for £7 or SAE for more details. R L Tuft, 62 Admirals Court, Thirsk, North Yorks. YO7 1RR. Telephone: 0845–525082

Pulser

A low–resolution programme which cycles the colours as you draw ... and keeps them moving. Create stunning graphics with movements. Every circle, line, square, ray etc can PULSE in any direction, all on the screen at the same time. £7.50 inclusive or £2.50 (refundable on upgrade) Demo 1 double sided or 2 single sided disks (state which). David J Fright, 113 Waytemore Road, Bishops Stortford, Herts.

SynTax

The ST adventure magazine on disk! Reviews, solutions, hints, special features and much, much more. Runs in colour only. Produced bi–monthly. **SynTax** costs £3.50 an issue, £20 for a year's subscription. Cheques made payable to S. Medley should be sent to: 9 Warwick Road, Sidcup, DA14 6LJ.

Clip Art

Clip Art specifically for Christian and Community Magazines. Seven disks of IMG images for DTP programs supplied with a printed picture catalogue of every image. Cost: £3 per disk plus P&P: total of £23 for the set. Cheques payable to: Peter Kempley, KemCom Designs, 21 Chart House Road, Ash Vale, Aldershot, GU12 5LS.

Genealogy

My geneaology program runs on any ST(E), SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London, SE26 6RX.

STEN

ST ENthusiasts disk magazine – for your copy send a disk + SAE to: Dave Mooney, 14 School Road, Morningside, Newmains, Lanarkshire.

Educational Adventures

For ages 5–13. 88% in ST Format. £12 each. 50p per disk for demo's. CVS, 18 Nelson Close, Teignmouth, TQ13 9NH. Tel: (0626) 779695.

Kitchen Design Program

Create kitchen plans, and elevation views to scale from a wide selection of units and appliances with worktops, pelmets, etc. High resolution mono only. Lawrence Elliott, 42 Gwaun Coed, Brackla, Bridgend, Mid Glamorgan, CF31 2HS.

Morse Master

The complete morse trainer and simulator, with realistic 'on–air' emulator and integral editor, with complete control of your listening equipment. In addition to sending, your Atari can also receive and decode morse from your own key using the supplied interface cable. Usable by novices and professional radio operators alike. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife, KY12 9TA. Telephone (0383) 729584 evenings for technical information.

Calamus Manual

This self–tutorial guide incorporating sections on frame drawing, entering text, changing fonts and styles, importingtext and images, drawing boxes and lines, loading, saving, printing, text rulers, headers and footers and page numbers. Available at £5 (including postage) from: David Waller, The Sandon School, Molram's lane, Great Baddow, Chelmsford, Essex, CM2 7AQ. Cheques should be made out to 'Sandon School'.

RAE Morse Test

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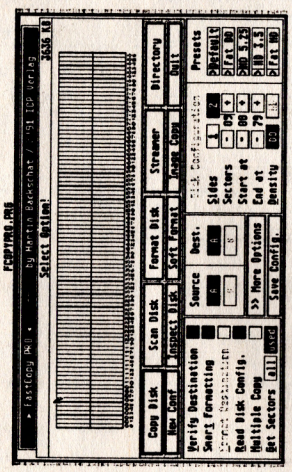

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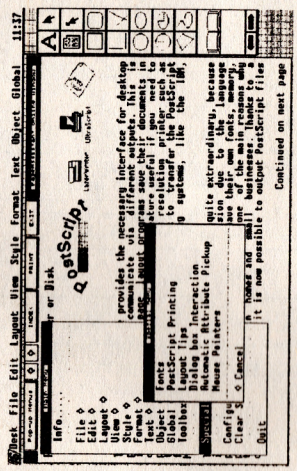

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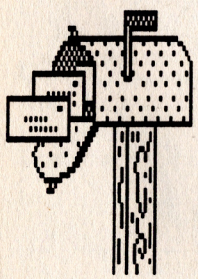

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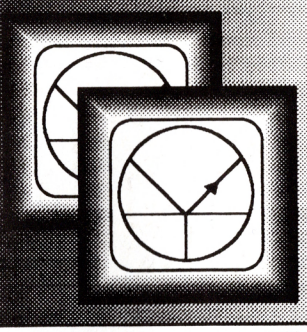

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Specifications

Timing:

240 pulses per quarter note (ppqn) timing resolution. Internal clock-synchronisation-to-hardware of 1/3200 sec (less than 1/3rd millisecond).

Structure:

100 tracks storage - output any 20 simultaneously. Up to 100 phrases may be placed on each track.

Mixdown (per output):

On/Solo/Mute, Volume, Program, Stereo Pan, Transpose, output Channel, Midi-Delay.

Controls:

Play, Pause/Continue, Record, Stop/CLear, Fast Forward (with playback), Fast Rewind, Go To Start, Go To End.

Loop Record (Off/New/Add). Multi Channel/One Channel Record. Multi Channel/One Channel Output Per Track. Tempo 40 to 240 bpm, Half Mode, and Recordable. PSG Metronome, Midi Metronome (tunable, two tones). Phrase Size (from 1 beat, to 68 bars of 4 beats per bar). Five Sync Modes.

240/24 ppq Mode Switch. Bar/Beat Position Counter. Realtime Stopwatch, Fit-Time Function. Midi Thru (1 to 16, Off, Multi-Channel). Intro (1 to 16, Off, First Note Trigger). Playback Cue Points (8, nameable, displayed in Scroll).

Edit Functions.

Direct insert/change of any Midi event via Midi or mouse.

Local Phrase Playback - Play and Edit only the Current Phrase.

Step Time Input - via Midi or Mouse, user defined step-jumps, notepitches, notelengths.

Copy, Split, Merge, Append, Rename,

Quantize - 11 levels, Auto, Humanise, Staccato, Legato

Transpose - To + or - 24 semitones.

Velocity - Level-all, Increment/Decrement All, Auto, Humanise, Rescale.

Filters - Immediate Filters, plus Input Filters for Note On/Off, Program, Bend, After Touch, Controllers (individual and multi).

Insert Continuous Scaled Controller - add Pan, Volume, etc., across a phrase.

Delimiters - Transpose/Velocity/Filter delimiters: - All Notes/One Pitch, All Channels/One Channel.

Buffer - 'Undo' the last edit/record.

File.

Midi standard file compatible. Load Song, Save Song, Load Phrase, Save Phrase, Delete File, Change Drive, Disk Space.

And More....

GEM Interface/Menu/Accessories support. Run 'slave' programs off disk from within Midistudio.

TLA Data Systems Pipeline/Modules Facility. Memory-linked modules are called as extra windows.

System Exclusive module built in.

System Exclusive Immediate/Auto Load+Send, Midi Song Number Set, and Transmit. Midi Song Position Transmit.

Remote Midi-Keys Control.

Continuous Load+Play (Performance) Mode.

Mouse Left/Right Button Exchange.

Text Notes Window.

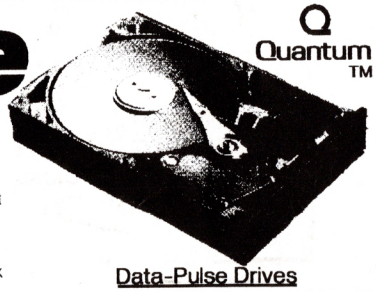
Hardcopy Facilities, telephone Help-Line, and Customisation Service.

£99

ST FORMAT GOLD AWARD

81% ST Format 27

Data Pulse



Quantum Mechanics

The 3.5" Auto-parking Quantum Mechanisms used in the Data-Pulse range of Hard Drives are made to very high American Military standard and are covered by a 2 year manufacturers warranty (from date of manufacture).They have a typical, effective access time of 9ms utilising a 64K look ahead disk cache. The mechanisms used are also very low power which means they can operate without a fan, reducing noise.

Data-Pulse Hard drives

- ☑ All drives are formatted/partitioned and tested.
- ☑ DMA device selector & On/Off switch on front of case.
- ☑ DMA Out port for daisy chaining extra drives/ Laser printer.
- ☑ Full metal case measuring 300mm x 285mm x 51mm (wdh), providing good shielding, and monitor stand.
- ☑ Choice of controller boards (prices differ):ICD board with battery backed clock or GEsoft. Both boards have a data transfer rate in excess of 1Mb per second and are supplied with formatting/partitioning software.
- ☑ All drives include backup software, MCP shell programme, Midistudio & Midistudio Master demo's.

Data-Pulse Drives

Data-Pulse 52Mb GE	£369.99
Data-Pulse 52Mb ICD	£389.99

New Prices

Data-Pulse 105Mb GE £464

Data-Pulse 105Mb ICD £484

84% ST Format 25

Aries

Ladbroke Computing have been active in the field of ST Memory upgrades for a number of years and can offer upgrade advice and solutions for the entire range of ST's.

We have developed our own .5/2/4Mb upgrade board using an in house designed, Multi layer circuit board which measures just 52mm x 62mm, smaller than a credit card. We have achieved this miniturisation by utilising 4 Megabit memory chip technology. The result of this reduction in size is a reduction in cost and more reliable operation, due to the fact that the board resides under the ST's shielding protecting it from interference and reducing Electromagnetic emissions.

The board is manufactured in the U.K. and hand assembled in our workshops by skilled technicians.

Memory Upgrades

The boards are then thoroughly tested before despatch.

The board now comes in three configurations, .5Mb, 2Mb and 4Mb. It is possible to start with a .5Mb board and to upgrade it to 2Mb and then 4Mb at a later date.

The boards require some soldering, due to the instability of some plug in devices, but are very easy to fit and come complete with full instructions to fit ANY ST including Mega's (except STE's which use SIMM boards). If your shifter chip is not socketed, you will have to desolder it and install a socket which is supplied.

A memory check program is supplied and skilled technicians are on hand to offer technical support.

Aries Upgrades (Any ST(F)(M))

512K Aries Board	*£ 39.99*
2Mb Aries Board	*£ 99.99*
4Mb Aries Board	*£ 169.99*

Our skilled technicians can install the above upgrade boards for £20 including VAT and return delivery.

Aries Upgrades STE

512K SIMM's upgrade	*£ 19.99*
2Mb SIMM's upgrade	*£ 74.99*

Please check configuration of your machine with our staff before ordering SIMM's upgrades.

16/4 chip upgd STFM £ 29.99

Please check the configuration of your machine before ordering. These chips are not surface mount.

Monitors

Atari SM144 Mono	**£ 139.99**
Atari SC1435 Colour	**£ 249.99**

The new colour Atari monitor comes with cable and tilt monitor stand.

Protar Visto Col Mon	**£ 219.99**

The Visto includes cable & 12 months on site replacement warranty.

Philips 15" Cube TV	**£ 269.99**

A 60 channel, FST, Fastext scart input TV which gives near monitor quality. Includes scart cable.

ST Secure

ST Secure is a security device which uses a combination of hardware and software to prevent unauthorised use of your ST. The "Timelock" hardware can be installed in your ST in approx 30 minutes with no soldering involved. Then when you switch on your ST you must enter the correct password using the "Key disk" or your ST will reset after 45 seconds. **Only £25 inc VAT & Delivery**

St Internal drive	***£53.49***
A/B Boot switch	***£14.99***

Our technicians can carry out repairs to all ST's. Phone for details.

Printers

Star SJ48 Bubblejet	**£239.99**
Star LC-20	**£139.99**
Star LC-200 colour	**£199.99**
Star LC24-20	**£199.99**
Star LC24-200	**£229.99**
Star LC24-200 colour	**£289.99**

All Star printers include 12 months on site warranty. All printers include ST/Amiga/PC compatible Centronics cable.

Golden Image

Golden Image External 3.5" Drive £64.99

Includes through port and LED track counter.

Golden Image Hand Scanner £149.99

Includes Touch Up and Deluxe Paint Software.

Brush Mice

The Golden Image Brush Mouse is an opto/ Mechanical mouse in the form of a brush. It has a resolution of 150Dpi, is switchable between ST/ Amiga and costs **£19.99.** The Brush mouse also comes with the excellent Deluxe Paint software for just **£24.99**

Golden Image Optical Mouse	**£34.99**

The Golden Image Optical mouse has a resolution of 250Dpi, comes complete with mat and is switchable ST/Amiga.

Jin Tech Mouse	**£12.98**

High quality replacement ST mouse.

Emulators

PC Speed,(XT)	**£ 90**

Please state STFM or STE version.

AT Speed	**£ 150**

Includes DR DOS

AT SPeed C16	**£ 229**

Includes DR DOS 5, Socket for 80C287 Co-Processor, Norton factor of 8.2

AT Speed-STE Adaptor	**£24.99**
AT Speed-Mega Adaptor	**£ 24.99**

GASTEINER Technologies

Tel: +44 081 365 1151
Fax: +44 081 885 1953

COMPUTERS

Atari

520STE 1/2Mb	£239.00
520STE 1Mb	£265.00
520STE 2Mb	£305.00
520STE 4Mb	£370.00
1040STE 1Mb	£339.00
Mega STE 0mb	£529.00
Mega STE 1/2 Mb	£549.00
Mega STE 1Mb (no hard drive)	£599.00
Mega STE 1Mb, 48Mb	£799.00
Mega STE 2Mb (no hard drive)	£649.00
Mega STE 2Mb, 48Mb	£849.00
Mega STE 2Mb, 80Mb	£959.00
Mega STE 4Mb, (no hard drive)	£719.00
Mega STE 4Mb, 48Mb	£919.00
Mega STE 4Mb, 80Mb	£1019.00
Mono Monitor (SM 144)	£109.00

MEGA STE HARD DRIVE KIT

48Mb	£349.00
80Mb	£449.00

Other capacity up to 500Mb please phone

TT 2Mb	£1899.00
TT 4Mb	£2000.00
TT 6Mb	£2350.00
TT 8Mb Special	£2500.00

IN STOCK

All TT's come with colour monitors

MONITORS

SM144 new 14" Hi-Res mono monitor	£149.00
Philips 14" COL	£219.00
Atari 14" COL	£239.00
Quadram 1480	£349.00
Philips 15" TV	£249.00

PRINTERS

Panasonic

KXP-1180	£155.00
KXP-1123	£209.00
KXP-1124i	£305.00

Star

LC-20	£149.00
LC24-200	£225.00
LC24-200 COL	£285.00

LASERS

Panasonic 4420	£849.00
HP IIIP	£879.00
Atari 605	£879.00
HP Deskjet 500	£379.00

GASTEINER MEGA DRIVES

ALL GASTEINER MEGA DRIVES are AUTO BOOTING & AUTO PARKING
Come with many different capacities
12 months back to base guarantee.
Full metal case
Integral power supply
Backup software
(+ FREE throughport clock)

MEGA DRIVES (SEAGATE MECHANICS)

32Mb 28ms	£269.00
50Mb 28ms	£329.00
65Mb 24ms	£349.00
85Mb 23ms	£399.00

MEGA DRIVES (QUANTUM MECHANICS)

52Mb 11ms	£349.00
105Mb 11ms	£459.00

MEGA DRIVES (NEC MECHANICS)

40Mb 24ms	£295.00
100Mb 24ms	£429.00

MEGA DRIVES KIT

Everything needed to build ATARI HARD DRIVE

Host Adaptor	£59.00
Metal Case	£35.00
50 Watt PSU	£35.00
DMA Cable	£5.00
SCSI Cable	£5.00

BARE DRIVES

Seagate 32Mb	£150.00
Seagate 50Mb	£199.00
Quantum 52Mb	£199.00
Quantum 105Mb	£279.00

MEMORY

For STFM & MEGA

2.0Mb	£99.00
1/2 Mb	£49.00

For STE

1/2 Mb	**£15.00**
2Mb	£69.00
4Mb	£139.00

PERIPHERALS

Optical Mouse	£29.95
Microswitch Mouse 300DPI	£12.95
Track Ball	£29.95
Track Ball (click & hold)	£39.95
Internal Power Supply for ST, STE and STF	£29.95
ST Clock with thru port	£14.95
Golden Image Scanner	£149.00
Gasteiner Mouse	£19.95

ATARI ST SOFTWARE

TOS 2.06 FOR ANY ST OR STE. PLEASE PHONE

DATABASE

Superbase Personal 2	£59.00
Superbase Pro	£169.00

MUSIC

C-LAB Notator	£399.00
C-LAB Creator	£249.00
CUBASE	£399.00
Cubeat	£219.00
C-LAB AURA	£89.00
C-LAB MIDIA	£65.00
C-LAB ALPHA	£189.00

DTP

Pagestream V2.1	£149.00
Fleet St	£159.00
Calamus	£248.00
Calamus SL	P.O.A
That Funface	£29.00
Time Works V2	£84.00

WORD PROCESSORS

That's Write V1.4	£29.00
1st Word+	£45.00
Calligrapher Pro	£110.00
Calligrapher Jnr	£65.00
Protext	£109.00

MISCELLANEOUS

Neo Desk 3	£28.00
Easy Draw 2	£34.00
Data Manager Pro	£29.00
Cyber Studio	£45.00
Cyber Control	£35.00
Cyber Paint	£45.00
3D Developer	£15.00
1st Mail	£10.00
LDW Power	£89.00
Maps & Legends	£15.00
Datamap 1	£10.00
Datamap 2	£10.00
Vide Titling	£10.00
3D Fonts 1	£10.00
3D Fonts 2	£10.00
Human Design Disk	£10.00
Future Design Disk	£10.00
Architectural Design Disk	£10.00
CAD 3D	£10.00
The Navigator	£10.00
Kemit	£10.00
Flash	£10.00
G.I.S.T.	£10.00
Fractal Generator	£10.00

"THIS MONTHS SPECIALS"

GASTEINER 105Mb (QUANTUM) 11ms.....£399.00

4Mb ATARI RAM UPGRADE FOR STF, STFM OR MEGA ST £149.00

GASTETNER, Unit 3 Millmead Business Centre, Millmead Road, London N17
Tel: 081 365 1151. Fax: 081 885 1953. Mon-Fri (9.30am-5.30pm) Sat (9am-2pm)

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